





*The true Effigies of Iohn Guttemberg Delineated from  
the Original Painting at Mentz in Germanie.*





*The true Effigies of Laurenz Ians. Koster. Delineated  
from his Monumentall Stone Statue, Erected at  
Harlem.*



MEMORIA  
SACRVM.

LAURENTIO  
COSTERO,  
HARLEMENSI,  
ALTERI CADMO,  
ET ARTIS  
TYPOGRAPHICÆ  
CIRCA AN. DOM.  
M. CCC. XXX.  
INVENTORI  
PRIMO,

BENE DE LITERIS  
AC TOT. ORBE  
MERENT. HANC  
C. L. C. Q.

STATVAM. OVIA  
AREA AVT MAR-  
MOREA DE FVIT.  
IRO MONV. MEN-  
TO POSVIT CIVIS  
GRATIS SIMVS

PETRVS  
SCRIVERIVS

1635.

**MECHANICK EXERCISES:**

Or, the Doctrine of

**Handy-works.**

Applied to the Art of

**Printing.**

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**The Second VOLUME.**

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By *Joseph Moxon*, Member of the Royal  
Society, and *Hydrographer* to the King's  
Most Excellent Majesty.

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**LONDON.**

Printed for *Joseph Moxon* on the West-  
side of *Fleet-ditch*, at the Sign of  
*Atlas.* 1 6 8 3.



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To the Right Reverend Father in GOD,  
*JOHN* Lord Bishop of *Oxford*, and  
Dean of *Christ-Church*; And to the  
Right Honourable Sir *LEOLINE*  
*JENKINS* Knight, and Principal  
Secretary of State; And to the Right  
Honourable Sir *JOSEPH WILLIAM-*  
*SON* Knight; and one of His Majesties  
most Honourable Privy-Council.

Right Honourable.

**Y** *Our ardent affections to promote  
Typographie has eminently ap-  
peared in the great Charge you  
have been at to make it famous  
here in England; wherēby this Royal Island  
stands particularly obliged to your Generous  
and Publick Spirits, and the whole Common-  
Wealth of Book-men throughout the World;  
to your Candid Zeal for the promulgation of  
good Learning.*

*Wherefore I humbly Dedicate this Piece  
of Typographie to your Honours; and*



as it is ( I think ) the first of this nature, so I hope you will favourably excuse small Faults in this Undertaking; for great ones I hope there are none, unless it be in this presumptuous Dedication; for which I humbly beg your Honours pardon: Subscribing my self, My Lord and Gentlemen,

*Your Honours most Humble  
and Obedient Servant.*

Joseph Moxon.

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**MECHANICK**

The Second VOLUME.

P R E F A C E.

**B**efore I begin with *Typographie*, I shall say some-what of its Original Invention; I mean here in Europe, not of theirs in China and other Eastern Countries, who (by general assent) have had it for many hundreds of years, though their Invention is very different from ours; they Cutting their Letters upon Blocks in whole Pages or Forms, as among us our Wooden Pictures are Cut; But Printing with single Letters Cast in Mettal, as with us here in Europe, is an Invention scarce above Two hundred and fifteen years old; and yet an undecidable Controversie about the original Contriver or Contrivers remains on foot,



*between the Harleimers of Holland, and those of Mentz in Germany: But because the difference cannot be determined for want of undeniable Authority, I shall only deliver both their Pleas to this Scientifick Invention.*

*The Harleimers plead that Lawrensz Janz Koster of Harlem was the first Invention of Printing, in the year of our Lord 1430. but that in the Infancy of this Invention he used only Wooden Blocks (as in China, &c. aforesaid) but after some time he left off Wood, and Cut single Letters in Steel, which he sunck into Copper Matrices, and fitting them to Iron Molds, Cast single Letters of Mettal in those Matrices. They say also, that his Companion, John Gutenberg, stole his Tools away while he was at Church, and with them went to Mentz in Germany, and there set his Tools to work, and promoted His claim to the first Invention of this Art, before Koster did His.*

*To prove this, they say that Rabbi Joseph ( a Jew ) in his Chronicle, mentions a Printed Book that he saw in Venice, in the year 5183. according to the Jewish Account, and by ours the year 1428. as may be read in Pet. Scriverius.*

*They say much of a Book intituled De Spiegel, Printed at Harlem in Dutch and Latin; which Book is yet there to be seen: and they alledge that Book the first that ever was Printed: But yet say not when this Book was Printed.*

*Notwithstanding this Plea, I do not find (perhaps because of their imperfect Proofs) but that Gutenberg of Mentz is more generally accepted for the first Invention of Printing, than Koster of Harlem.*

*The Learned Dr. Wallis of Oxford, hath made an Inquiry into the original of this Invention, and hath in brief sum'd up the matter in these words.*

About

About the year of our Lord 1460. The Art of *Printing* began to be invented and practised in Germany, whether first at *Mentz* or first at *Harlem* it is not agreed. But it seems that those who had it in consideration before it was brought to perfection, disagreeing among themselves, did part Company; and some of them at *Harlem*, others at *Mentz* pursued the design at the same time.

*The Book which is commonly reputed to have been first Printed is, Tullies Offices, of which there be Copies extant (as a Rarity) in many Libraries; which in the close of it is said to be Printed at Mentz, in the year of our Lord 1465. (so says that Copy in the Bodleyan Library) or 1466. (so that in the Library of Corpus Christi.) The words in the close of that in Corpus Christi Colledge Oxon are these,*

*Præfens Marcij Tullij Clarissimum opus, Johannes Huft, Moguntinus Civis, non Atrimento, plumali canna, neq; ærea, sed Arte quadam perpulchra, Petri manu Petri de Geursbem pueri mei, feliciter effeci, finitum Anno MCCCC LX VI quarto die Mensis Februarij.*

*The like in the Bodleyan Library; save there the Date is only thus, Finitum Anno MCCCC LXV. In the same Book there are these written Notes subjoyned: Hic est ille Johannes Faustus, coadjutor Johannes Gutenbergij primi Typographiæ inventaris, Alter coadjutor erat Petrus Schæfer, i. Opilio. Quovix.*

*Cælando promptior alter erat, inquit Johan. Arnoldus in Libello de Chalcographiæ inventione, Scheffer primas finxit quas vocant Matrices. Hi tres exercuerunt artem primo in communi. mox rupto fœdere seorsim sibi quisq; privatim.*

*And again (in a later hand) Inventionem artis Typographicæ ad Annum 1453. aut exerciter referunt Sabellicus En. 10. lib. 6. & Monſterus. Alij ad Annum 1460. Vi. de Polid. Virg. lib. 2. de Invent. Rerum, Theod. Bibland. de Ratione communis linguarum. cap. de Chalcographia.*

*At Harlem and ſome other places in Holland, they pretend to have Books Printed ſomewhat ancients than this; but they are moſt of them (if not all) done by way of Carving whole Pages in Wood, not by ſingle Letters Caſt in Mettal, to be Compoſed and Diſtributed as occaſion ſerves, as is now the manner.*

*The chief Inventer at Harlem is ſaid to be Laurens Janſz Koſter.*

*After theſe two places (Mentz and Harlem) it ſeems next of all to have been practiſed at Oxford: For by the care, and at the charge of King Henry the 6th, and of Thomas Bourchier then Arch-Biſhop of Canterbury (and Chancellour of the University of Oxford) Robert Turner Maſter of the Robe, and William Caxton a Merchant of London were for that purpoſe ſent to Harlem, at the charges partly of the King, partly of the Arch-Biſhop, who then (becauſe theſe of Harlem were very chary of this ſecret) prevailed privately with one Frederick Corſeles an under-Workman, for a ſum of Money, to come over hither; who thereupon did at Oxford ſet up the Art of Printing, before it was exerciſed any where elſe in England, or in France, Italy, Venice, Germany, or any other place, except only Mentz and Harlem (aforementioned): And there be ſeveral Copies yet extant (as one in the Archives of the University of Oxford, another in the Library of Dr. Tho. Barlow, now Biſhop of Lincoln) of a Treatiſe  
of*

of St. Jerome (as it is there called ( because found among St. Jerom's Works ) or rather Ruffinus upon the Creed, in a broad Octavo) Printed at Oxford in the year 1468. as appears by the words in the close of it.

Explicit expositio Sancti Jeronimi in sembolo Apostolorum ad papam Laurentium Impressi Oxonie & finita Anno Domini MCCCCCLXVIII. xvij die Decembris.

Which is but three years later than that of Tullies Offices at Mentz, in 1465. and was perhaps one of the first Books Printed on Paper, (that of Tully being on Vellom. ) And there the excercise of Printing hath continued successively to this day.

Soon after William Caxton (the same I suppose who first brought it to Oxford ) promoted it to London also, which Baker in his Chronicle ( and some others ) say to have been about the year 1471. but we have scarce any Copies of Books there Printed remaining ( that I have seen ) earlier than the year 1480. And by that time, or soon after, it began to be received in Venice, Italy, Germany, and other places, as appears by Books yet extant, Printed at divers places in those Times. Thus far Dr. Wallis.

But whoever were the Inventers of this Art, or ( as some Authors will have it ) Science ; nay, Science of Sciences (say they) certain it is, that in all its Branches it can be deemed little less than a Science : And I hope I say not to much of Typographie : For Dr. Dee, in his Mathematical Preface to Euclids Elements of Geometrie, hath worthily taken pains to make Architecture a Mathematical Science ; and as a vertual Proof of his own Learned Plea, quotes two Authentique Authors, viz.

Vitruvius and Leo Baptista, who both give their descriptions and applause of Architecture: His Arguments are somewhat copious, and the Original easily procurable in the English Tongue; therefore instead of transcribing it, I shall refer my Reader to the Text it self.

Upon the consideration of what he has said ~~in~~ <sup>on</sup> behalf of Architecture, I find that a Typographer ought to be equally quallified with all the Sciences that becomes an Architect, and then I think no doubt remains that Typographie is not also a Mathematical Science.

For my own part, I weighed it well in my thoughts, and find all the accomplishments, and some more of an Architect necessary in a Typographer: and though my business be not Argumentation, yet my Reader, by perusing the following discourse, may perhaps satisfie himself, that a Typographer ought to be a man of Sciences.

By a Typographer, I do not mean a Printer, as he is Vulgarly accounted, any more than Dr. Dee means a Carpenter or Mason to be an Architect: But by a Typographer, I mean such a one, who by his own Judgement, from solid reasoning with himself, can either perform, or direct others to perform from the beginning to the end, all the Handy-works and Physical Operations relating to Typographie.

Such a Scientifick man was doubtless he who was the first Inventer of Typographie; but I think few have succeeded him in Science, though the number of Founders and Printers be grown very many: Inasmuch that for the more easie managing of Typographie, the Operators have found it necessary to devide it into several Trades, each of which (in the strictest sence) stand no  
nearer



*nearer related to Typographie, than Carpentry or Masonry, &c. are to Architecture. The several devissions that are made, are,*

*First The Master Printer, who is as the Soul of Printing; and all the Work-men as members of the Body governed by that Soul subserveient to him; for the Letter-Cutter would Cut no Letters, the Founder not sinck the Matrices, or Cast and Dress the Letters, the Smith and Joyner not make the Press and other Utensils for Printing, the Compositor not Compose the Letters, the Correcter not read Proves, the Press-man not work the Forms off at the Press, or the Inck-maker make Inck to work them with, but by Orders from the Master-Printer.*

*Secondly, The Letter-Cutter,  
Thirdly, The Letter-Caster, } Founders.  
Fourthly, The Letter-Dresser.*

*But very few Founders exercise, or indeed can perform all these several Trades.; though each of these are indifferently called Letter-Founders.*

*Fifthly, The Compositor,  
Sixthly, The Correcter, } Printers.  
Seventhly, The Press-man,  
Eighthly, The Inck-maker.*

*Besides several other Trades they take in to their Assistance; as the Smith, the Joyner, &c.*

ADVER.

## ADVERTISEMENT.

8

**T**HE continuation of my setting forth *Mechanick Exercises* having been obstructed by the breaking out of the Plot, which took off the minds of my few Customers from buying them, as formerly; And being of late much importun'd by many worthy Persons to continue them; I have promised to go on again, upon Condition, That a competent number of them may be taken off my hand by Subscribers, soon after the publication of them in the *Gazet*, or posting up Titles, or by the *Mercurius Librarius*, &c.

Therefore such Gentlemen or others as are willing to promote the coming forth of these *Exercises*, are desired to Subscribe their Names and place of abode: That so such Persons as live about this City may have them sent so soon as they come forth: Quick Sale being the best encouragement.

Some Gentlemen (to whom they are very acceptable) tell me they will take them when all *Trades* are finish'd, which cannot reasonably be expected from me (my Years considered) in my life-time; which implies they will be Customers when I'me dead, or perhaps by that time some of themselves.

The price of these Books will be 2 *d.* for each Printed Sheet. And 2 *d.* for every Print taken off of Copper Cuts.

There are three reasons why this price cannot be thought dear.

1. The Writing is all new matter, not Collected, or Translated from any other Authors: and the drafts of the Cuts all drawn from the Tools and Machines used in each respective Trade.

2. I Print but 500 on each Sheet, And those upon good Paper: which makes the charge of Printing dear, proportionable to great numbers.

3. Some Trades are particularly affected by some Customers, (who desire not the rest,) and consequently sooner fold off, which renders the remainder of the un-sold *Exercises* unperfect, and therefore not acceptable to such as desire all: so that they will remain as waste-Paper on my hands.

JOSEPH MOXON.

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# MECHANICK EXERCISES:

Or, the Doctrine of

## Handy-works.

Applied to the Art of

## Printing.

### The Second VOLUME.

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#### § 2. *Of the Office of a Master-Printer.*

I Shall begin with the Office of a *Master-Printer*, because (as aforesaid) he is the Director of all the Work men, he is the Base (as the *Dutchmen* properly call him) on which the Workmen stand, both for providing Materials to Work withal, and successive variety of Directions how and in what manner and order to perform that Work.

His Office is therefore to provide a House, or Room or Rooms in which he is to set his *Printing-House*. This expression may seem strange, but it is *Printers Language*: For a *Printing-House* may admit of a twofold meaning; one the Vulgar acceptance,

C

and



and is relative to the House or Place wherein *Printing* is used; the other a more peculiar Phrase *Printers* use among themselves, viz. only the *Printing Tools*, which they frequently call a *Printing House*: Thus they say, Such a One has set up a *Printing House*, when as thereby they mean he has furnish'd a House with *Printing Tools*. Or such a one has remov'd his *Printing-House*, when thereby they only mean he has remov'd the Tools us'd in his former House. These expressions have been used Time out of mind, and are continued by them to this day.

But to proceed, Having consider'd what number of *Presses* and *Cases* he shall use, he makes it his business to furnish himself with a Room or Rooms well-lighted, and of convenient capacity for his number of *Presses* and *Cases*, allowing for each *Press* about Seven Foot square upon the Floor, and for every *Frame* of *Cases* which holds Two pair of *Cases*, viz. one pair *Romain* and one pair *Italica*, Five Foot and an half in length (for so much they contain) and Four Foot and an half in breadth, though they contain but Two Foot and Nine Inches: But then room will be left to pass freely between two *Frames*.

We will suppose he resolves to have his *Presses* and *Cases* stand in the same Room (though in *England* it is not very customary) He places the *Cases* on that side the Room where they will most conveniently stand, so, as when the *Compositer* is at work the Light may come in on his Left-hand; for else his Right hand plying between the Window-light and his Eye might shadow the *Letter* he would pick up: And the *Presses* he places so, as the Light may fall from a Window  
right

right before the *Form* and *Tinpan*: And if scituation will allow it, on the North-side the Room, that the *Press-men*, when at their hard labour in *Summer* time, may be the less uncommoded with the heat of the *Sun*: And also that they may the better see by the constancy of that Light, to keep the whole *Heap* of an equal Colour.

He is also to take care that his *Presses* have a solid and firm Foundation, and an even Horizontal Floor to stand on, That when the *Presses* are set up their Feet shall need no Underlays, which both damage a *Press*, are often apt to work out, and consequently subject it to an unstable and loose position, as shall further be shewn when we come to the Setting up of the *Press*s.

And as the Foundation ought to be very firm, so ought also the Roof and Sides of the *Press Room* to be, that the *Press* may be fastned with Braces overhead and on its Sides, as well and steady as under foot.

He is also to take care that the Room have a clear, free and pretty lofty Light, not impeded with the shadow of other Houses, or with Trees; nor so low that the Sky-light will not reach into every part of the Room: But yet not too high, lest the violence of *Winter* (*Printers* using generally but Paper-windows) gain too great advantage of Freezing the Paper and Letter, and so both Work and Workman stand still. Therefore he ought to Philosophize with himself, for the making the height of his Lights to bear a rational proportion to the capacity of the Room.

Here being but two sides of the Room yet used,

he places the *Correcting-stone* against a good Light, and as near as he can towards the middle of the Room, that the *Compositers* belonging to each end of the Room may enjoy an equal access to it. But sometimes there are several *Correcting-stones* plac'd in several parts of the Room.

The *Lye-Trough* and *Rincing-Trough* he places towards some corner of the Room, yet so as they may have a good Light; and under these he causes a *Sink* to be made to convey the Water out of the Room: But if he have other conveniencies for the placing these Troughs, he will rather set them out of the Room to avoid the flabbering they cause in.

About the middle of the Room he places the *De-stributing-Frame* (*viz.* the *Frame* on which the *Forms* are set that are to be *De-stributed*) which may stand light enough, though it stand at some considerable distance from the Window.

In some other empty place of the Room (least frequented) he causes so many *Nest-Frames* to be made as he thinks convenient to hold the *Cases* that may lye out of present use; and the *Letter-boards* with *Forms* set by on them, that both the *Cases* and the *Forms* may be the better secured from running to *Pye*.

Having thus contrived the several Offices of the Room, He furnishes it with *Letters*, *Presses*, *Cases*, *Chases*, *Furniture*, &c. Of each of which in Order.

## ¶ 2. Of Letter.

He provides a *Fount* ( properly a *Fund* ) of *Letter* of all *Bodies*; for most *Printing-Houses* have all except the two first, viz. *Pearl*, *Nomparel*, *Brevier*, *Long-Primmer*, *Pica*, *English*, *Great-Primmer*, *Double-Pica*, *Two Lin'd English*, *Great-Cannon*.

These are the *Bodies* most of use in *England*; But the *Dutch* have several other *Bodies*: which because there is little and almost no perceivable difference from some of these mentioned, I think they are not worth naming. Yet we have one *Body* more which is sometimes used in *England*; that is a *Small Pica*, but I account it no great discretion in a *Master Printer* to provide it; because it differs so little from the *Pica*, that unless the *Workmen* be carefuller than they sometimes are, it may be mingled with the *Pica*, and so the Beauty of both *Founts* may be spoil'd.

These afore said *Bodies* are commonly *Cast* with a *Romain*, *Italica*, and sometimes an *English Face*. He also provides some *Bodies* with the *Musick*, the *Greek*, the *Hebrew*, and the *Syriack Face*: But these, or some of these, as he reckons his opportunities may be to use them.

And that the Reader may the better understand the sizes of these several *Bodies*, I shall give him this Table following; wherein is set down the number of each *Body* that is contained in one Foot.

<i>Pearl,</i>	184	} contained in one Foot.
<i>Nomparel,</i>	150	
<i>Brevier,</i>	112	
<i>Long-Primmer,</i>	92	
<i>Pica,</i>	75	
<i>English,</i>	66	
<i>Great-Primmer,</i>	50	
<i>Double-Pica,</i>	38	
<i>Two-Lin'd English,</i>	33	}
<i>Great-Cannon.</i>	17½	

His care in the choice of these *Letters* are,

*First*, That the *Letter* have a true shape: Which he may know, as by the §. of *Letter-Cutting*.

I confess this piece of Judgement, *viz.* knowing of true Shape, may admit of some controversy; because neither the Ancients whom we received the knowledge of these *Letters* from, nor any other authentick Authority have delivered us Rules, either to make or know true shape by: And therefore it may be objected that every one that makes *Letters* but tolerably like *Romain*, *Italick*, &c. may pretend his to be true shap'd.

To this I answer, that though we can plead no Ancient Authority for the shape of *Letters*, yet doubtless (if we judge rationally) we must conclude that the *Romain Letters* were Originally invented and contrived to be made and consist of Circles, Arches of Circles, and straight Lines; and therefore those *Letters* that have these Figures, either entire, or else properly mixt, so as the Course and Progress of the Pen



Pen may best admit, may deserve the name of true Shape, rather than those that have not.

Besides, Since the late made *Dutch-Letters* are so generally, and indeed most deservedly accounted the best, as for their Shape, consisting so exactly of Mathematical Regular Figures as aforesaid, And for the commodious Fatness they have beyond other *Letters*, which easing the Eyes in Reading, renders them more Legible ; As also the true placing their Fats and their Leans, with the sweet driving them into one another, and indeed all the accomplishments that can render *Letter* regular and beautiful, do more visibly appear in them than in any *Letters* Cut by any other People : And therefore I think we may account the Rules they were made by, to be the Rules of true shap'd *Letters*:

For my own part, I liked their *Letters* so well, especially those that were Cut by *Christophel Van Dijck* of *Amsterdam*, that I set my self to examine the Proportions of all and every the parts and Members of every *Letter*, and was so well pleased with the Harmony and Decorum of their Symetrie, and found so much Regularity in every part, and so good reason for his Order and Method, that I examined the biggest of his *Letters* with Glasses, which so magnified the whole *Letter*, that I could easily distinguish, and with small Dividers measure off the size, scituation and form of every part, and the proportion every part bore to the whole ; and for my own future satisfaction collected my Observations into a Book, which I have inserted in my *Exercises* on *Letter-Cutting*. For therein I have exhibited to the

the World the true Shape of *Christophel Van Dijcks* aforesaid *Letters*, largely Engraven in Copper Plates.

Whence I conclude, That since common consent of Book men assign the Garland to the *Dutch-Letters* as of late *Cut*, and that now those *Letters* are reduced unto a Rule, I think the Objection is Answered; And our *Master Printers* care in the choice of good and true shap'd *Letters* is no difficult Task: For if it be a large Bodied *Letter*, as *English*, *Great-Primmer* and upwards, it will shew it self; and if it be small, as *Pearl*, *Nomparel*, &c. though it may be difficult to judge the exact Symetry with the naked Eye, yet by the help of a *Magnifying-Glass* or two if occasion be, even those small *Letters* will appear as large as the biggest Bodied *Letters* shall to the naked Eye: And then it will be no difficult Task to judge of the Order and Decorum even of the smallest Bodied *Letters*. For indeed, to my wonder and astonishment, I have observ'd *V. Dijcks Pearl Dutch Letters* in Glasses that have Magnified them to great *Letters*, and found the whole Shape bear such true proportion to his great *Letters*, both for the *Thickness*, *Shape*, *Fats* and *Leans*, as if with Compasses he could have measur'd and set off in that small compass every particular Member, and the true breadth of every *Fat* and *Lean Stroak* in each *Letter*, not to exceed or want (when magnified) of *Letter Cut* to the *Body* it was Magnified to.

His second care in the choice of *Letters* is, That they be deep *Cut*; for then they will *Print* clear the longer, and be less subject to entertain *Picks*.

His third care, That they be deep sunk in the  
*Matrices*,

*Matrices* least the bottom line of a *Page* Beard. Yet though they be deep sunk, His care ought to be to see the Beard also well cut off by the *Founder*.

And a Fourth Care in the choice of *Letter* is, That his *Letter* be Cast upon good Mettal, that it may last the longer.

Of each Body he provides a *Fount* suitable to such sorts of Work as he designs to do ; But he provides not an equal weight of every *Fount* ; Because all these Bodies are not in equal use : For the *Long-Primmer*, *Pica* and *English* are the Bodies that are generally most used ; And therefore he provides very large *Founts* of these, viz. of the *Long-Primmer* in a small *Printing-House*, Five hundred Pounds weight *Romain* and *Italica*, whereof One hundred and fifty Pounds may be *Italica*. Of the *Pica* and *English*, *Roman* and *Italica*, Eight, Nine hundred, or a Thousand Pounds weight : when as of other *Founts* Three or Four hundred Pounds weight is accounted a good *Fount* : And of the *Cannon* and *Great-Cannon*, One hundred Pounds or somewhat less may serve his turn ; Because the common use of them is so set Titles with.

Besides *Letters* he Provides Characters of Astronomical Signs, *Planets*, *Aspects*, *Algebraical* Characters, Physical and Chymical Characters, &c. And these of several of the most used Bodies.

He Provides also *Flowers* to set over the Head of a *Page* at the beginning of a Book : But they are now accounted old-fashion, and therefore much out of use. Yet *Wooden Borders*, if well Drawn, and neatly Cut, may be Printed in a Creditable Book, As also,

D

Wooden-



*Wooden-Letters* well Drawn and neatly Cut may be used at the beinning of a *Dedication, Preface, Section, &c.* Yet instead of *Wooden Letters*, *Capitals* Cast in Mettal generally now serves; because but few or good *Cutters* in *Wood* appear.

He also provides *Brass Rules* of about Sixteen Inches long, that the *Compositer* may cut them into such Lengths as his Work requires.

In the choice of his *Brass Rules*, he examines that they be exactly *Letter* high; for if they be much too high, they may cut through *Paper, Tinpan* and *Blankets* too; And if they be but a little too high, not only the Sholder, or Beard, on either side them will *Print* black; but they will bear the *Plattin* off the *Letters* that stand near them, so that those *Letters* will not *Print* at all: And if they be too low, then the *Rules* themselves will not *Print*.

It sometimes happens through the unskilfulness of the *Joyner*, (for they commonly, but improperly, imploy *Joyners* to make them) that a Length shall be hollow in the middle both on the Face and Foot, and shall run driving higher and higher towards both ends: Hence it comes to pass, that when the *Compositer* cuts a piece of *Rule* to his intended Length, the *Rule* shall *Print* hard at one end, and the other shall not *Print* at all; So that he shall be forced to knock up the foot of the low end, as shall be shewn in its proper place.

But the careful *Master-Printer* having found that his *Brass Rules* is *Letter* high all the whole Length, will also examine whether it be straight all the whole Length, which he does by applying both the  
Face

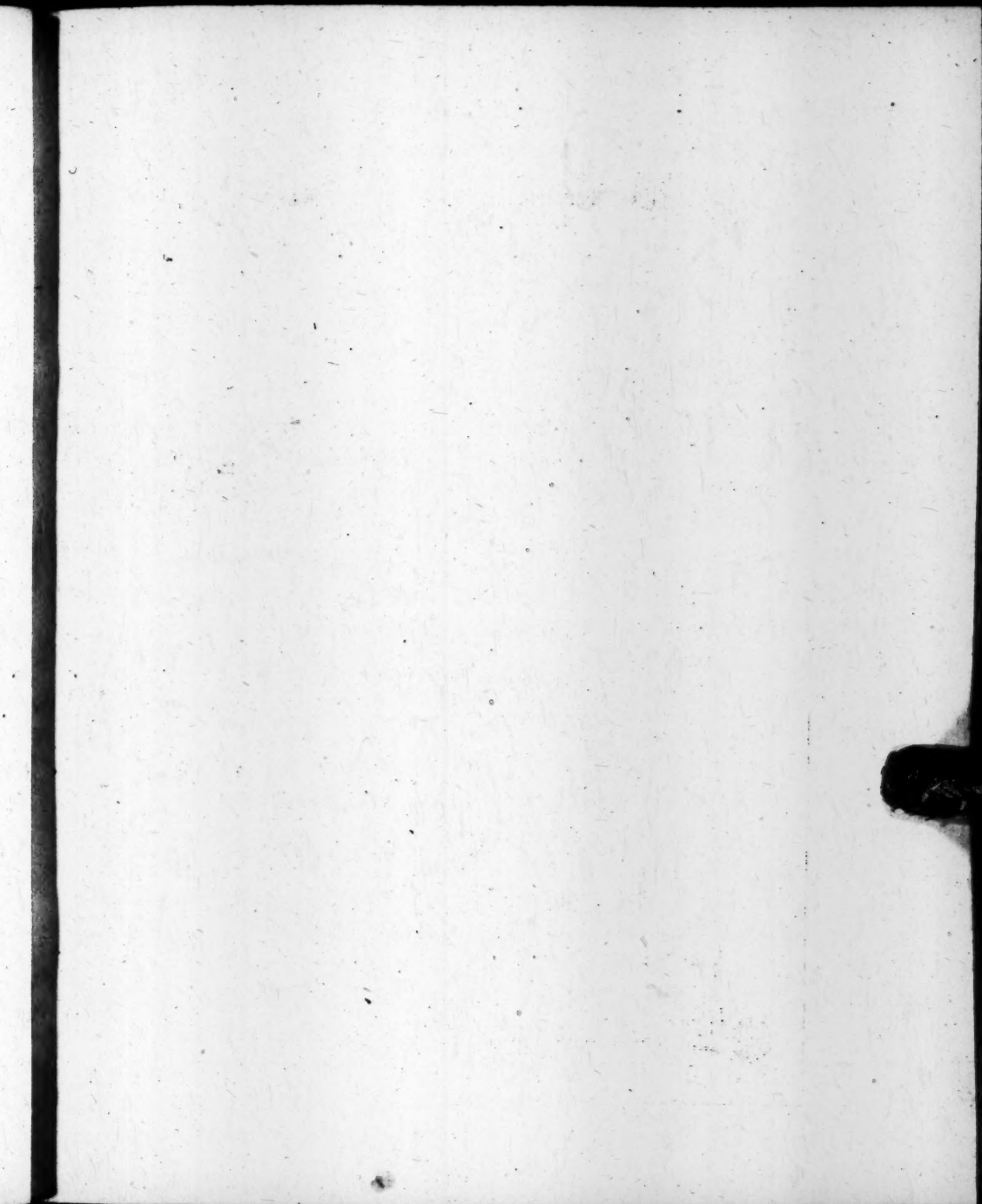
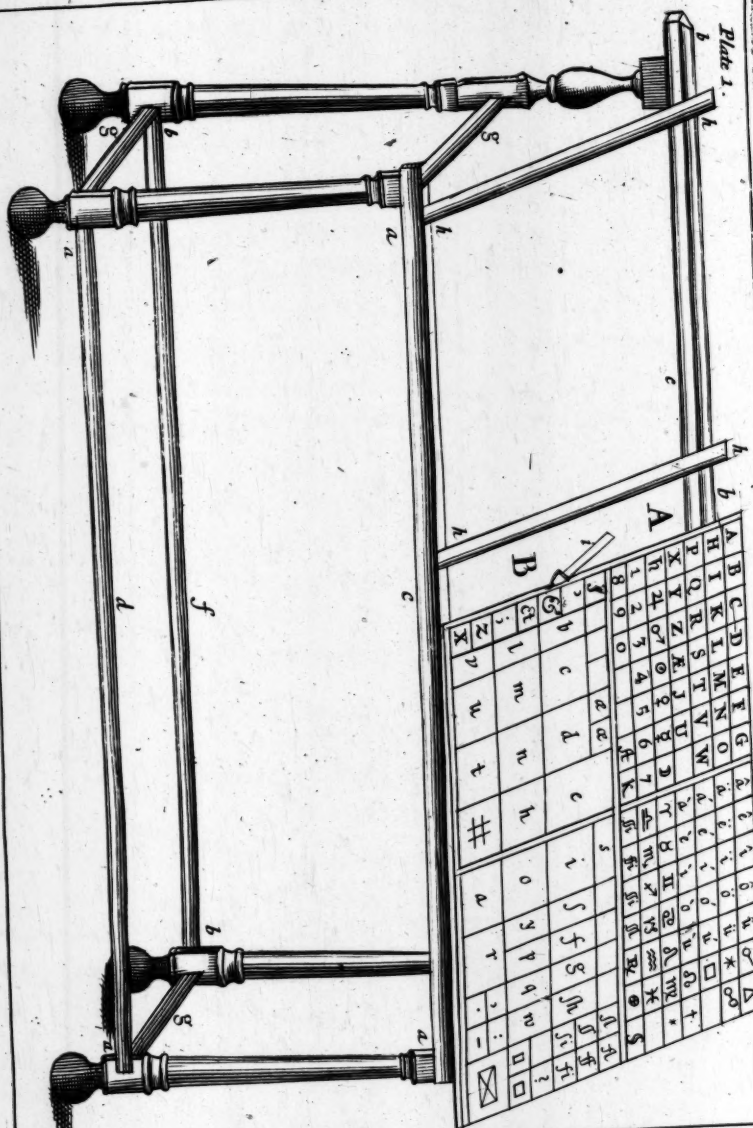


Plate 1.



Face and Foot to the surface of the *Correlling-stone*.; And if the Face and Foot comply so closely with the *Correlling-stone*, that light cannot be seen between them, he concludes the *Brass-Rule* is straight.

Then he examines the Face or Edge of the *Rule*, whether it have an Edge of an equal breadth all the whole Length, and that the Edge be neither too thick nor too fine for his purpose.

He should also take care that the *Brass*, before it be cut out, be well and skilfully Planish't, nor would that charge be ill bestowd; for it would be saved out of the thickness of the *Brass* that is commonly used: For the *Joyners* being unskilful in Planishing, buy Nea'd thick *Brass* that the *Rule* may be strong enough, and so cut it into slips witout Hammering, which makes the *Rule* easily bow any way and stand so, and will never come to so good and smooth an Edge as Planish't *Brass* will. Besides, *Brass* well Planish't will be stiffer and stronger at half the thickness than unplanish't *Brass* will at the whole: As I shall further shew when I come to Exercise upon *Mathematical Instrument-making*.

### §. 3. Of Cases.

Next he provides *Cases*. A Pair of *Cases* is an *Upper-Case* and a *Lower Case*.

The *Upper Case* and the *Lower-Case* are of an equal length, breadth and depth, viz. Two Foot nine Inches long, One Foot four Inches and an half broad, and about an Inch and a quarter deep, besides the bottom Board; But for small Bodied *Letters* they are made somewhat shallower, and for great Bodies deeper.

*Long-Primmer* and downwards are accounted small Bodies ; *English* and upwards are accounted great Bodies.

The conveniencies of a shallow *Cafe* is, that the *Letters* in each Box lye more visible to the last , as being less shadowed by the sides of the *Boxes*.

The conveniencies of a deep *Cafe* is, that it will hold a great many *Letters*, so that a *Compositer* needs not so often *Des tribute*. 2dly. It is not so soon *Low*, ( as *Compositers* say when the *Cafe* grows towards empty ) and a *Low Cafe* is inconvenient for a *Compositer* to work at, partly because the *Cafe* standing shelving downwards towards them, the *Letters* that are in the *Cafe* tend towards the hither side of the *Cafe*, and are shadowed by the hither side of that *Box* they lye in, so that they are not so easily seen by the Eye, or so ready to come at with the Fingers, as if they lay in the middle of the *Box*.

These *Cases* are encompassed about with a *Frame* about Three quarters of an Inch broad, that the ends of the several partitions may be let into the substance of the *Frame*: But the hithermost side of the *Frame* is about half an Inch higher than the other sides, that when either the *Galley* or another pair of *Cases* are set upon them, the bottom edge of the *Galley*, or of those *Cases* may stop against that higher *Frame*, and not slide off.

Both the *Upper* and the *Lower Cafe* have a thick Partition about three quarters of an Inch broad, Duff-tail'd into the middle of the upper and under Rail of the *Frame*. This Partition is made thus broad, that Grooves may be made on either side of it to receive



ceive the ends of those Partitions that deuide the breadth of the *Cafe*, and also to strengthen the whole *Frame*; for the bottom Board is as well nailed to this thick Partition as to the outer *Frame* of the *Cafe*.

But the deuisions for the several *Boxes* of the *Upper* and *Lower Cafes* are not alike: for each half of the whole length of the *Upper-Cafe* is deuided into seven equal parts, as you may see in Plate 1. at A, and its breadth into seven equal parts, so that the whole *Upper-Cafe* is deuided into Ninety eight square *Boxes*, whose sides are all equal to one another.

But the Two halves of the length of the *Lower-Cafe* are not thus deuided; for each half of the length of the *Lower-Cafe* is deuided into Eight equal parts, and its breadth into Seven; but it is not throughout thus deuided neither; for then the *Boxes* would be all of equal size: But the *Lower-Cafe* is deuided into four several sizes of *Boxes*, as you may see in Plate 1. B.

The reason of these different sizes of *Boxes* is, That the biggest *Boxes* may be disposed nearest the *Compositers* hand, because the English Language, and consequently all English *Coppy* runs most upon such and such Sorts; so that the *Boxes* that holds those Sorts ought to be most capacious.

His care in the choice of these *Cases* is, That the Wood they are made of be well-season'd-Stuff.

That the Partitions be strong, and true let into one another, and that the ends fill up and stand firm in the Grooves of the *Frame* and middle *Rail* of the *Cafe*.

There is an inconvenience that often happens, these thin Partitions, especially if they be made of unseason'd Stuff. viz. as the Stuff dries it shrinks in the Grooves

Grooves of the *Frame*, and so not only grows loose, but sometimes starts out above the top of the *Frame*. To prevent this inconvenience, I have of late caused the ends of these thin partitions to be made *Mal-Duf-tails*, broadest on the under side, and have them fitted into *Female-Duf-tails* in the *Frame* of the *Cafe*, and middle Rail before the bottom Boards are nailed on.

That the Partitions be full an *English* Body thick.

That the Partitions lye close to the bottom of the *Cafe*, that so the *Letters* slide not through an upper into an under *Box*, when the Papers of the *Boxes* may be worn.

#### §. 4. Of Frames to set the Cases on.

*Frames* are in most *Printing Houses* made of thick *Deal-board Battens*, having their several *Rails Tennanted* into the *Stiles*: but these sorts of *Frames* are, in respect of their matter (*viz. Fir*) so weak, and in respect of their substance (*viz. little above an Inch thick*) so slight, that experience teaches us, when they are even new made, they tremble and totter, and having lasted a little while, the thinness of their *Tennants* being a little above a quarter of an Inch thick, according to the Rules of *Joynery*, as I have shewn in *Numb. 5. §. 17.* They Craze, their *Tennants* break, or *Mortesses* split, and put the *Master-Printer* to a fresh Charge.

It is rationally to be imagined that the *Frames* should be designed to last as long as the *Printing house*; and therefore our *Master-Printer* ought to take care that they be made of matter strong enough, and of substance big enough to do the Service they are intended for;

for; that they stand substantial and firm in their place, so as a small Jostle against them shake them not, which often reiterated weakens the *Frame-work*, and at that present is subject to shake the *Letter* in the *Galley* down.

I shall not offer to impose Rules upon any here, especially since I have no Authority from Prescript or Custom; yet I shall set down the Scantlings that I my self thought fit to use on this occasion. A Delineation of the *Frames* are in Plate 1. at C.

*a a a a* The *Fore-Rails*.

*b b b b* The *Hind-Rails*.

*c* The *Top Fore-Rail*.

*d* The *Bottom-Fore-Rail*.

*e* The *Top Hind-Rail*.

*f* The *Bottom Hind-Rail*.

*g g g g* The *End-Rail*.

*h h h h* *Cross-Bearers*.

I made the *Rails* and *Stiles* of well-seasoned fine Oak, clean, (that is free from Knots and Shakes) the *Stiles* and *Rails* two Inches and an half square, the Top and Bottom *Fore-Rails* and the Bottom *Hind-Rail* four Foot three Incies long, besides their *Tenants*; And the Top *Hind Rail* five Foot three Inches long. The two *Fore Rails* and Botrom *Hind-Rail* had Iron Female Screws let into them, which, through an hole made in the *Stiles*, received a Male-Screw with a long shank, and a Sholder at the end of it to screw them tight and firm together, even as the *Rails* of a *Bedsted* are screwed into the *Mortesses* of a *Bed Post*.

E

Each



Each *Back-Stile* was four Foot one Inch and an half high besides their *Tennants*, and each *Fore-Stile* three Foot three Inches high; each *Fore* and *Back-Stile* had two *Rails* one Foot seven Inches long, besides their *Tennants* Tennanted and Pin'd into them, because not intended to be taken assunder.

It must be considered, that the *Fore-stiles* be of a convenient height for the pitch of an ordinary Man to stand and work at, which the height aforesaid is; And that the *Hind-stiles* be so much higher than the *Fore-stiles*, that when the *Cross-Bearers* are laid upon the upper *Fore* and *Hind-Rail*, and the *Cases* laid on them, the *Cases* may have a convenient declivity from the upper side the *Upper-Case*, to the lower side the *Lower-Case*.

The Reason of this declivity is, because the *Cases* standing thus before the Workman, the farther *Boxes* of the *Upper-Case* are more ready and easie to come at, than if they lay flat; they being in this position somewhat nearer the hand, and the *Letters* in those *Boxes* somewhat easier seen.

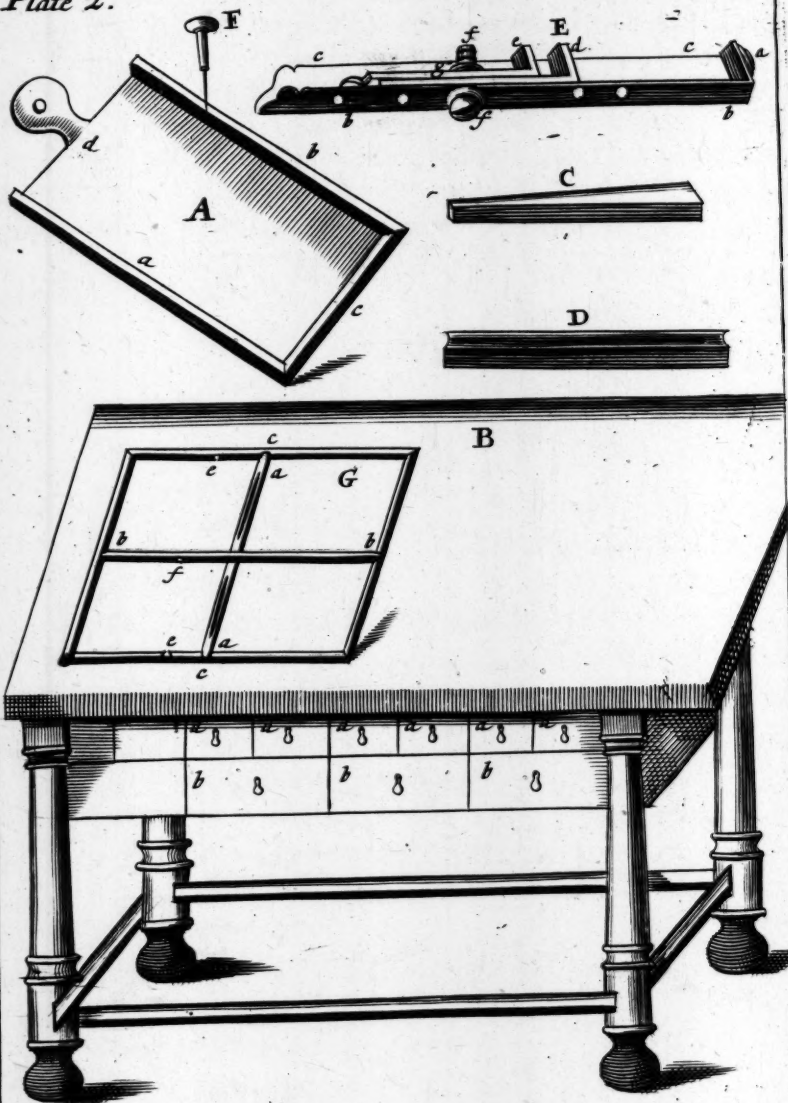
If the Workman prove taller than Ordinary, he lays another or two pair of *Cases* under the *Cases* he uses, to mount them: If the Workman be short, as Lads, &c. He lays a *Paper-board* (or sometimes two) on the floor by the Fore-side of the *Frame*, and standing to work on it, mounts himself.

The *Bearers* are made of *Slit-Deal*, about two Inches broad, and so long as to reach from the *Fore-Rail* through the *Upper-Rail*, and are let in, so as to lye even with the superficies of the *Fore* and *Hind-Rail*, and at such a distance on both the *Rails*, as you may see in the Figure.

On



Plate 2.



On the Superficies of the *Fore-Rail*, even with its Fore-Edge is nailed a small *Riglet* about half an Inch high, and a quarter and half quarter of an Inch thick, that the *Cases* set on the *Frame* having the aforesaid declivity, may by it be stop't from sliding off.

### §. 5. Of the Galley.

Our *Master-Printer* is also to provide *Galleys* of different sizes, That the *Compositer* may be suited with small ones when he *Composes* small *Pages*, and with great ones for great *Pages*.

The *Galley* is marked A in Plate 2.

*a b c* The Sides or Frame of the *Galley*.

*d* The *Slice*.

These *Galleys* are commonly made of two flat *Wainscot Boards*, each about a quarter and half quarter of an Inch thick, the uppermost to slide in Grooves of the *Frame*, close down to the undermost, though for small *Pages* a single Board with two sides for the *Frame* may serve well enough: Those *Wainscot Boards* are an Oblong Square, having its length longer than its breadth, even as the form of a *Page* hath. The three Sides of the *Frame* are fixed fast and square down on the upper Plain of the undermost Board, to stand about three fifth parts of the height of the *Letter* above the superficies of the *Slice*. The Sides of the *Frame* must be broad enough to admit of a pretty many good strong *Oaken Pins* along

the Sides, to be drove hard into the Bottom Board, and almost quite through the Sides of the Frame, that the Frame may be firmly fixed to it: But by no means must they be Glewed on to the Bottom Board, because the *Compositer* may sometimes have occasion to wet the *Page* in the *Galley*, and then (the *Galley* standing aslope upon the *Cafe*) the Water will soak between the sides of the Frame; and under Board, and quickly loosen it.

#### §. 6. Of the Correcting-stone.

The *Correcting-Stone* marked B in Plate 2. is made of *Marble*, *Purbeck*, or any other Stone that may be made flat and smooth: But yet the harder the Stone is the better; wherefore *Marble* is more preferable than *Purbeck*. First, Because it is a more compact Stone, having fewer and smaller Pores in it than *Purbeck*. And Secondly, because it is harder, and therefore less subject to be prick'd with the corners of a *Chase*, if through carelessness (as it sometimes happens) it be pitch'd on the Face of the Stone.

It is necessary to have it capacious, *viz.* large enough to hold two *Chases* and more, that the *Compositer* may sometimes for his convenience, set some *Pages* by on it ready to *Impose*, though two *Chases* lye on the *Stone*: Therefore a *Stone* of about Four Foot and an half long, and Two Foot broad is a convenient size for the generality of Work.

This *Stone* is to be laid upon a strong *Oaken-wood* Frame, made like the Frame of a common Table, so high, that the Face of the *Stone* may lye about three Foot



Foot and an Inch above the Floor : And under the upper Rail of the Frame may be fitted a Row of two of Draw-Boxes, as at *a a a a a* and *b b b* on each of its longest Sides to hold *Flowers, Brads-Rules, Braces, Quotations, small Scabbords, &c.*

§. 7. Of Letter-Boards, and Paper-Boards.

*Letter-Boards* are Oblong Squares, about two Foot long, eighteen Inches broad, and an Inch and a quarter thick. They ought to be made of clean and well-season'd Stuff, and all of one piece: Their upper-side is to be Plained very flat and smooth, and their under-side is Clamped with pieces about two Inches square, and within about four Inches of either end, as well to keep them from Warping, as to bear them off the Ground or any other Flat they stand on, that the Fingers of the *Compositer* may come at the bottom of the Board to remove it whither he will: They are commonly made of *Fir*, though not so thick as I have mentioned, or all of one Piece: *Deal-Boards* of this breadth may serve to make them of; but *Joyners* commonly put *Master-Printers* off with ordinary *Deal-Boards*, which not being broad enough, they joyn two together; for which cause they frequently shrink, so as the joynt comes assunder, and the *Board* becomes useles, unless it be to serve for a *Paper-Board* afterwards: For small and thin *Letters* will, when the Form is open, drop through, so as the *Compositer* cannot use the Board.

I us'd to make them of *Sugar-Chest*; That Stuff being commonly well-season'd, by the long lying of the  
Sugar

*Sugar* in it, and is besides a fine hard Wood, and therefore less subject to be injured by the end of the *Shooting-Stick* when a *Form* is *Unlocking*.

*Paper Boards* are made just like the *Letter-Boards*, though seldom so large, unless for great Work: Nor need such strict care be taken in making them so exactly smooth: their Office being only to set *Heaps* of *Paper* on, and to *Press* the *Paper* with.

#### §. 8. Of Furniture, Quoyns, Scabbord, &c.

By *Furniture* is meant the *Head-sticks*, *Foot-sticks*, *Side-sticks*, *Gutter-sticks*, *Riglets*, *Scabbords* and *Quoyns*.

*Head-sticks* and all other *Furniture*, except *Scabbord*, are made of dry *Wainscot*, that they may not shrink when the *Form* stands by; They are *Quadrat* high, straight, and of an equal thickness all the length: They are made of several thicknesses for several Works, viz. from a *Brevier* which serves for some *Quarto's* to six or eight *Pica* thick, which is many times us'd to *Folio's*: And many of the *Head-sticks* may also serve to make Inner *Side-sticks* of; for the *Master-Printer* provides them of lengths long enough for the *Compositer* to cut to convenient Scantlins or Lengths, they being commonly about a Yard long when they come from the *Joyners*. And *Note*, that the *Head* and *Side-sticks* are called *Riglets*, if they exceed not an *English* thick.

Outer *Side-sticks* and *Foot-sticks* marked C in Plate 2. are of the same height of the *Head-sticks*, viz. *Quadrat* high, and are by the *Joyner* cut to the given length, and to the breadth of the particular *Pages* that

that are to be *Imposed*: The *Side-sticks* are placed against the outer side of the *Page*, and the *Foot-sticks* against the foot or bottom of the *Page*: The outer sides of these *Side* and *Foot-sticks* are bevil'd or sloped from the further to the hither end.

*Gutter-sticks* marked D in Plate 2. are as the former, *Quadrat* high, and are used to set between *Pages* on either side the *Crosses*, as in *Octavo's*, *Twelves*, *Sixteens*, and *Forms* upwards; They are made of an equal thickness their whole length, like *Head-sticks*; but they have a Groove, or Gutter laid on the upper side of them, as well that the Water may drain away when the *Form* is Washed or Rinced, as that they should not *Print*, when through the tenderness of the *Tinpan*, the *Plattin* presses it and the *Paper* lower than ordinary.

*Scabbord* is that sort of *Scale* commonly sold by some *Iron-mongers* in Bundles; And of which, the *Scabbords* for *Swords* are made: The *Compositer* cuts it *Quadrat* high, and to his Length.

The *Master-Printer* is to provide both *Thick* and *Thin Scabbord*, that the *Compositer* may use either when different Bodied *Letter* happens in a *Page*, to justify the *Page* to a true length; And also that the *Press-man* may chuse *Thick* or *Thin* to make truer *Register*, as shall be shewed in proper place.

*Quoyns* are also *Quadrat* high, and have one of their sides Bevil'd away to comply with the Bevil of the *Side* and *Foot-sticks*; they are of different Lengths, and different Breadths: The great *Quoyns* about three Inches square, except the Bevil on one side as aforesaid; and these sizes deminish downwards.

to an Inch and an half in length, and half an Inch in breadth.

Of these *Quoins* our *Master-Printer* provides several hundreds, and should provide them of at the least ten different Breadths between the aforesaid sizes, that the *Compositer* may chuse such as will best fit the *Chase* and *Furniture*.

The Office of these *Quoins* are to *Lock* up the *Form*, viz. to wedge it up (by force of a *Mallet* and *Shooting-stick*) so close together, both on the sides and between Head and Foot of the *Page*, that every *Letter* bearing hard against every next *Letter*, the whole *Form* may *Rise*; as shall be shewed hereafter.

Their farther Office is to make *Register* at the *Press*.

### §. 9. ¶. 1. Of the *Mallet*, *Shooting-stick* and *Dressing-Block*, *Composing-sticks*, *Bodkin*, and *Chase*. &c.

*Printers Mallets* have a *Cilindrick* Head, and a round Handle; The Head somewhat bigger, and the Handle somewhat longer than those *Joyners* commonly use; Yet neither shape or size different for any reason to be given: But only a Custom always used to have them so. The Head is commonly made of *Beech*.

¶ 2. *Of the Shooting-stick.*

The *Shooting-stick* must be made of *Box*, which Wood being very hard, and withal tough, will best and longest endure the knocking against the *Quoyns*. Its shape is a perfect Wedge about six Inches long, and its thicker end two Inches broad, and an Inch and an half thick; and its thin end about an Inch and an half broad, and half an Inch thick.

¶ 3. *Of the Dressing-Block.*

The *Dressing-Block* should be made of *Pear-tree*, Because it is a soft wood, and therefore less subject to injure the Face of the *Letter*; it is commonly about three Inches square, and an Inch high. Its Office is to run over the Face of the *Form*, and whilst it is thus running over, to be gently knock't upon with the Head of the *Shooting stick*, that such *Letters* as may chance to stand up higher than the rest may be pressed down.

Our *Master-Printer* must also provide a pair of *Sheers*, such as *Taylor's* use, for the cutting of *Brass-Rules*, *Scabbords*, &c.

A large *Sponge* or two, or more, he must also provide, one for the *Compositors* use, and for every *Press* one.

Pretty fine *Packthread* to tie up *Pages* with; But this is often chosen (or at least directed) by the *Compositor*, either finer or coarser, according to the great or small *Letter* he works upon.



### ¶ 4. Of the Composing-stick.

Though every *Compositer* by Custom is to provide himself a *Composing-stick*, yet our *Master-Printer* ought to furnish his House with these Tools also, and such a number of them as is suitable to the size of his House; Because we will suppose our *Master-Printer* intends to keep some Apprentices, and they, unless by contract or courtesie, are not used to provide themselves *Composing-sticks*: And besides, when several *Compositers* work upon the same Book, their Measures are all set alike, and their *Titles* by reason of *Notes* or *Quotations* broader than their common Measure, So that a *Composing-stick* is kept on purpose for the *Titles*, which must therefore be common to all the *Compositers* that work upon that Work; And no one of them is obliged to provide a *Composing-stick* in common for them all: Therefore it becomes our *Master-Printers* task to provide them.

It is delineated in Plate 2. at E.

a The Head.

b b The Bottom.

c c The Back.

d The lower *Sliding-Measure*, or *Cheek*.

e The upper *Sliding Measure*, or *Cheek*.

f f The Male-Screw.

g The Female-Screw.

These *Composing-sticks* are made of Iron Plate about the thickness of a thin *Scabbord*, and about ten  
Inches

Inches long doubled up square ; so as the Bottom may be half an Inch and half a quarter broad, and the Back about an whole Inch broad. On the further end of this Iron Plate thus doubled up, as at *a* is Soldered on an Iron Head about a *Long-Primmer* thick ; But hath all its outer edges Basild and Fil'd away into a Molding : This Iron Head must be so let into the Plate, and Soldered on to it, that it may stand truly square with the bottom, and also truly square with the Back, which may be known by applying the outer sides of a square to the Back and Bottom ; as I shewed, *Numb. 3. Fol. 38, 39.* About two Inches from the Head, in the Bottom, is begun a row of round holes about an Inch assunder, to receive the shank of the *Male-Screw* that screws the *Sliding Measures* fast down to the Bottom ; so that the *Sliding-Measures* may be set nearer or further from the Head, as the Measure of a *Page* may require.

The lower *Sliding-Measure* marked *d* is an Iron Plate a *thick Scabbord* thick, and of the Breadth of the inside of the Bottom ; It is about four Inches long, and in its middle hath a Groove through it within half an Inch of the Fore-end, and three quarters of an Inch of the hinder end. This Groove is so wide all the way, that it may receive the Shank of the *Screw*. On the Fore-end of this Plate stands square upright another Iron Head about a *Brevier* thick, and reaches so high as the top of the Back.

The upper *Sliding-Measure* is made just like the lower, only it is about three quarters of an Inch shorter.

Between these two *Sliding-Measures*, *Marginal Notes* are *Composed* to any Width.

*Compositers* commonly examine the Truth of their *Stick* by applying the head of the *Sliding-Measure* to the inside of the Head of the *Stick*; and if they comply, they think they are square and true made: But this Rule only holds when the Head it self is square. But if it be not, 'tis easy to file the *Sliding-Measures* to comply with them: Therefore, as afore said, the square is the only way to examine them by.

#### ¶ 5. Of the Bodkin.

The *Bodkin* is delineated in Plate 2. at *F* Its *Blade* is made of *Steel*, and well tempered, its shape is round, and stands about two Inches without the *Shank* of the *Handle*. The *Handle* is turned of soft wood as *Alder*, *Maple*, &c. that when *Compositers* knock the Head of the *Bodkin* upon the Face of a *Single Letter* when it stands too high, it may not batter the Face.

#### ¶ 6. Of Chases, marked G on the Correcting-Stone, Plate 2.

A *Chase* is an Iron Frame about two and twenty Inches long, eighteen Inches broad, and half Inch half quarter thick; and the breadth of Iron on every side is three quarters of an Inch: But an whole Inch is much better, because stronger. All its sides must stand exactly square to each other; And when it is laid on the *Correcting-Stone* it must lye exactly flat,  
viz.

*viz.* equally bearing on all its sides and Angles: The outside and inside must be Filed straight and smooth. It hath two *Crosses* belonging to it, *viz.* A *Short-Cross* marked *a a* and a *Long-Cross* marked *b b*: These two *Crosses* have on each end a Male Dustail Filed Bevil away from the under to the upper side of the *Cross*, so that the under side of the Dustail is narrower than the upper side of the Dustail. These Male-Dustails are fitted into Female-Dustails, Filed in the inside of the *Chase*, which are also wider on the upper side of the *Chase* than on the under side; because the upper side of the *Cross* should not fall through the lower side. These *Crosses* are called the *Short* and the *Long Crosses*.

The *Short-Cross* is Dustail'd in as aforesaid, just in the middle of the *Chase* as at *c c*, and the *Long Cross* in the middle of the other sides the *Chase*, as at *d d*. The *Short-Cross* is also Dustail'd into Female-Dustails, made as aforesaid, about three Inches and an half from the middle; as at *e e*: So that the *Short Cross* may be put into either of the Female-Dustails as occasion serves. The middle of these two *Crosses* are Filed or notched half way through, one on its upper, the other on its under side to let into one another, *viz.* the *Short-Cross* is Filed from the upper towards the under side half way, and the *Long-Cross* is Filed from the lower towards the upper-side half way: The *Crosses* are also thus let into each other, where they meet at *f*, when the *Short-Cross* is laid into the other Female-Dustails fitted to it at *e e*.

In the middle, between the two edges of the upper side of the *Short-Cross*, is made two Grooves parallel

rallel to the sides of the *Cross*, beginning at about two Inches from each end, and ending at about seven Inches from each end: It is made about half an Inch deep all the way, and about a quarter of an Inch broad, that the *Points* may fall into them. The *Short-Cross* is about three quarters of an Inch thick, and the *Long Cross* about half that thickness. All their sides must be Fil'd straight and smooth, and they must be all the way of an equal thickness.

Hitherto our *Master-Printer* hath provided Materials and Implements only for the *Compositors* use; But he must provide Machines and Tools for the *Press-men* to use too: which (because I am loath to discourage my Customers with a swelling price at the first reviving of these Papers) I shall (though against my interest) leave for the subject of the next succeeding *Exercises*.

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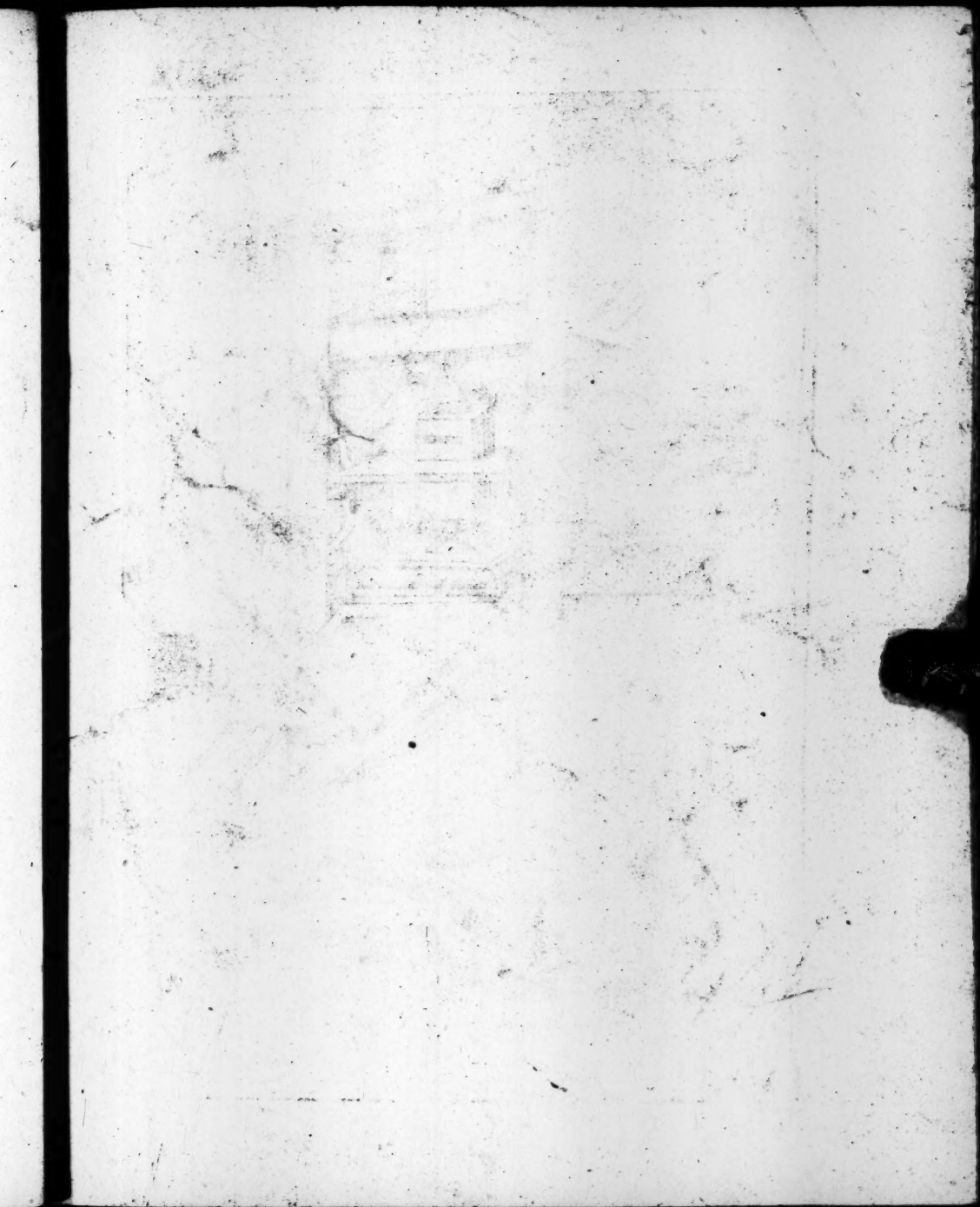
#### ADVERTISEMENT S.

**T**HE first Volume of *Mechanick Exercises*, Treating of the Smiths, the Joyners, the Carpenters, and the Turners Trades, containing 37<sup>2</sup> sheets, and 18 Copper Cuts, are to be had by the Author. Joseph Moxon. Price 9 s. 3 d. in Quires.

**T**He first Volume of the *Monthly Collection* of Letters for Improvement of Husbandry and Trade, containing Twenty four Sheets with an Index, is now finished, and the second is carrying on:

By John Haughton, Fellow  
of the Royal Society.





*Plate 3.*

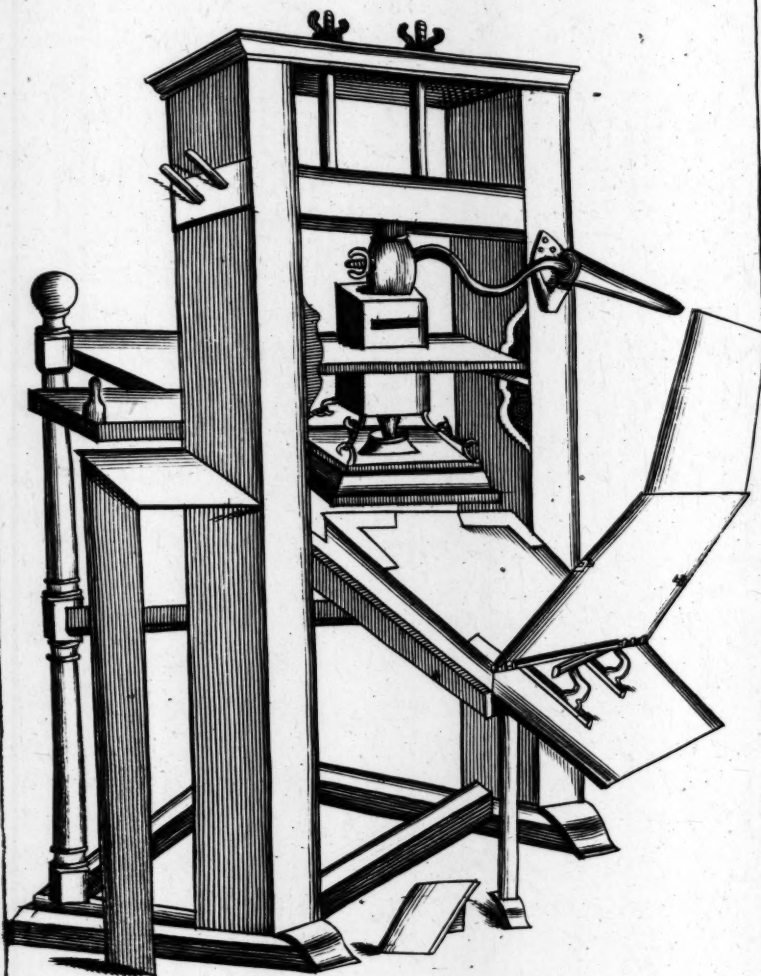
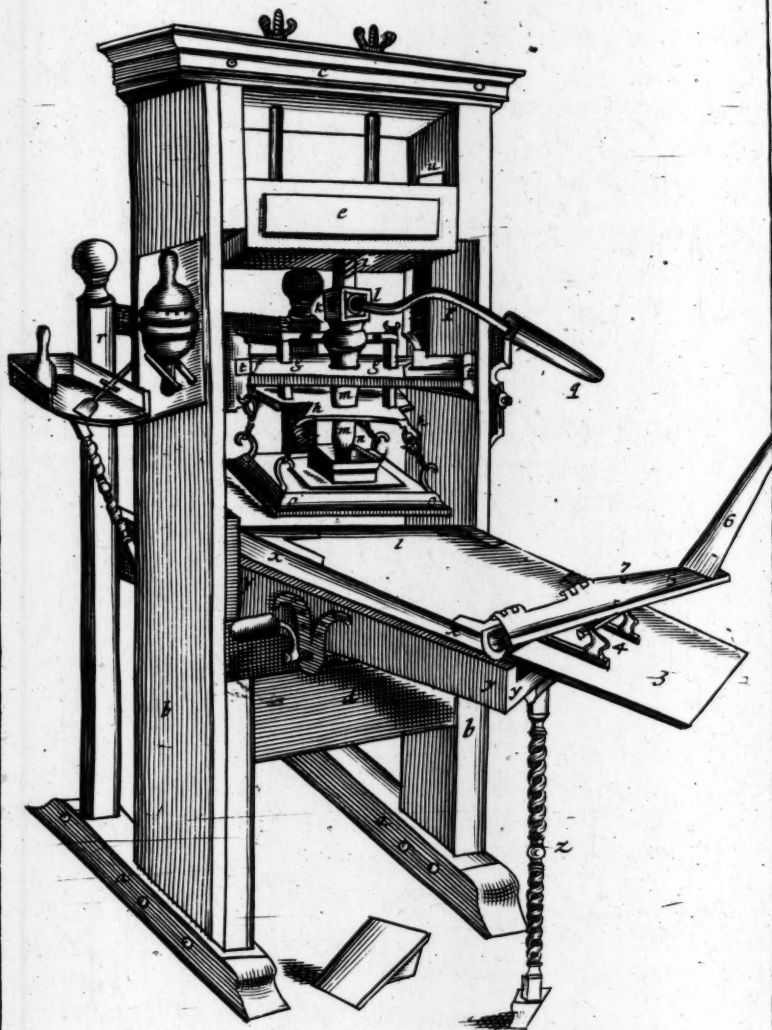




Plate 4.



# MECHANICK EXERCISES:

Or, the Doctrine of

## Handy-works.

Applied to the Art of

## Printing.

The Second VOLUME.

### §. 10. Of the Press.

**T**Here are two sorts of *Presses* in use, viz. the old fashion and the new fashion; The old fashion is generally used here in *England*; but I think for no other reason, than because many *Press-men* have scarce Reason enough to distinguish between an excellently improved Invention, and a makeshift slovenly contrivance, practiced in the minority of this Art.

The New-fashion'd *Presses* are used generally throughout all the *Low-Countries*; yet because the

G

Old-



Old-fashion'd *Presses* are used here in *England* (and for no other Reason) I have in Plate 3. given you a delineation of them; But though I give you a draft of them; yet the demensions of every particular Member I shall omit, referring those that think it worth their while, to the *Joyners* and *Smiths* that work to *Printers*: But I shall give a full description of the New-fashion'd *Press*, because it is not well known here in *England*; and if possible, I would for Publick benefit introduce it.

But before I proceed, I think it not amiss to let you know who was the Inventer of this New-fashion'd *Press*, accounting my self so much oblig'd to his Ingeniety for the curiosity of this contrivance, that should I pass by this opportunity without naming him, I should be injurious to his Memory.

It was *Willem Jansen Blaew* of *Amsterdam*: a Man as well famous for good and great *Printing*, as for his many *Astronomical* and *Geographical* exhibitions to the World. In his Youth he was bred up to *Joyner*y, and having learn'd his Trade, betook himself (according to the mode of *Holland*) to Travel, and his fortune leading him to *Denmark*, when the noble *Tycho Brahe* was about setting up his *Astronomical Observatory*, was entertain'd into his service for the making his Mathematical-Instruments to Observe withal; in which Instrument-making he shew'd himself so intelligent and curious, that according to the general report of many of his personal acquaintance, all or most of the *Syderal Observations* set forth in *Tycho's* name, he was intrusted to make, as well as the Instruments.

And

And before these Observations were publish'd to the World, *Tycho*, to gratify *Blaew*, gave him the Copies of them, with which he came away to *Amsterdam*, and betook himself to the making of *Globes*, according to those Observations. But as his Trade increased, he found it necessary to deal in *Geographical Maps* and *Books* also, and grew so curious in *Engraving*, that many of his best *Globes* and *Maps* were *Engraved* by his own Hands; and by his conversation in *Printing* of Books at other *Printing-houses*, got such in-sight in this Art, that he set up a *Printing-house* of his own. And now finding inconveniencies in the obsolete Invention of the *Press*, He contrived a remedy to every inconvenience, and fabricated nine of these New-fashioned *Presses*, set them all on a row in his *Printing-house*, and call'd each *Press* by the name of one of the *Muses*.

This short History of this excellent Man is, I confess forraign to my Title; But I hope my Reader will excuse the digression, considering it tends only to the commemoration of a Person that hath deserved well of Posterity, and whose worth without this small Monument, might else perhaps have slid into Oblivion.

The *Press* is a Machine consisting of many Members; it is delineated in Plate 4.

*a a* The Feet.

*b b* The Cheeks.

*c* The Cap.

*d* The Winter.

*e* The Head.

*f* The Till.

G 2

g g The

g g The *Hofe*. In the *Croſs-Iron* of which, encompassing the *Spindle*, is the *Garter*.

h h h h The *Hooks* on the *Hofe* the *Plattin* hangs on.

i k l m n The *Spindle*.

i Part of the *Worm* below the *Head*, whose upper part lies in the *Nut* in the *Head*.

k l The *Eye* of the *Spindle*.

m The *Shank* of the *Spindle*.

n The *Toe* of the *Spindle*.

o o o o The *Plattin* tyed on the *Hooks* of the *Hofe*.

p The *Bar*.

q The *Handle* of the *Bar*.

r r The *Hind-Posts*.

s s The *Hind-Rails*.

t t The *Wedges* of the *Till*.

u u The *Mortesses* of the *Cheeks*, in which the *Tenants* of the *Head* plays.

x x x x y y The *Carriage*.

x x x x The outer *Frame* of the *Carriage*.

y y The *Wooden-Ribs* on which the *Iron-Ribs* are fastned.

z The *Stay* of the *Carriage*, or the *Stay*.

1. The *Coffin*.

2. The *Gutter*.

3. The *Planck*.

4. The *Gallows*.

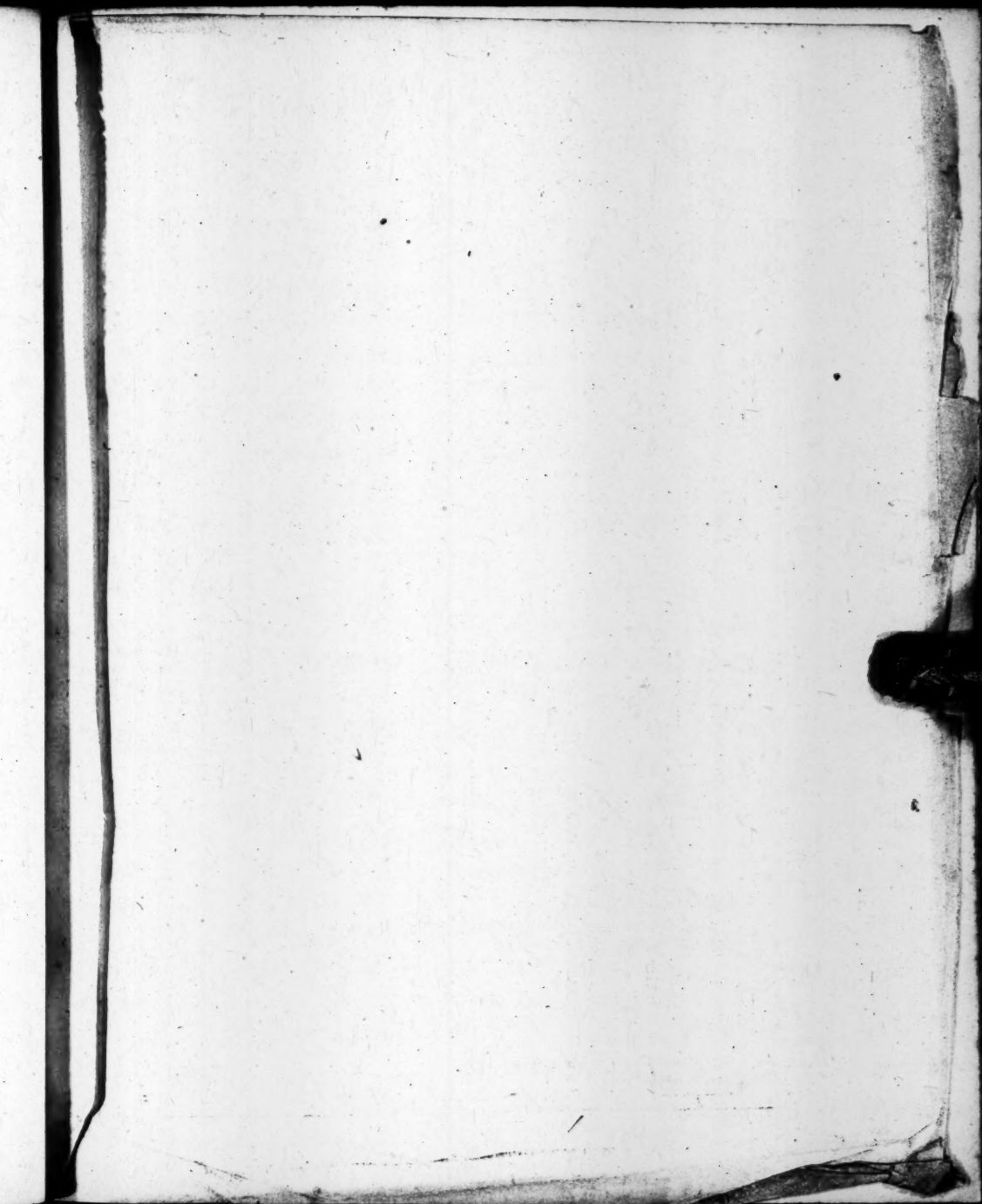
5. The *Tinpans*.

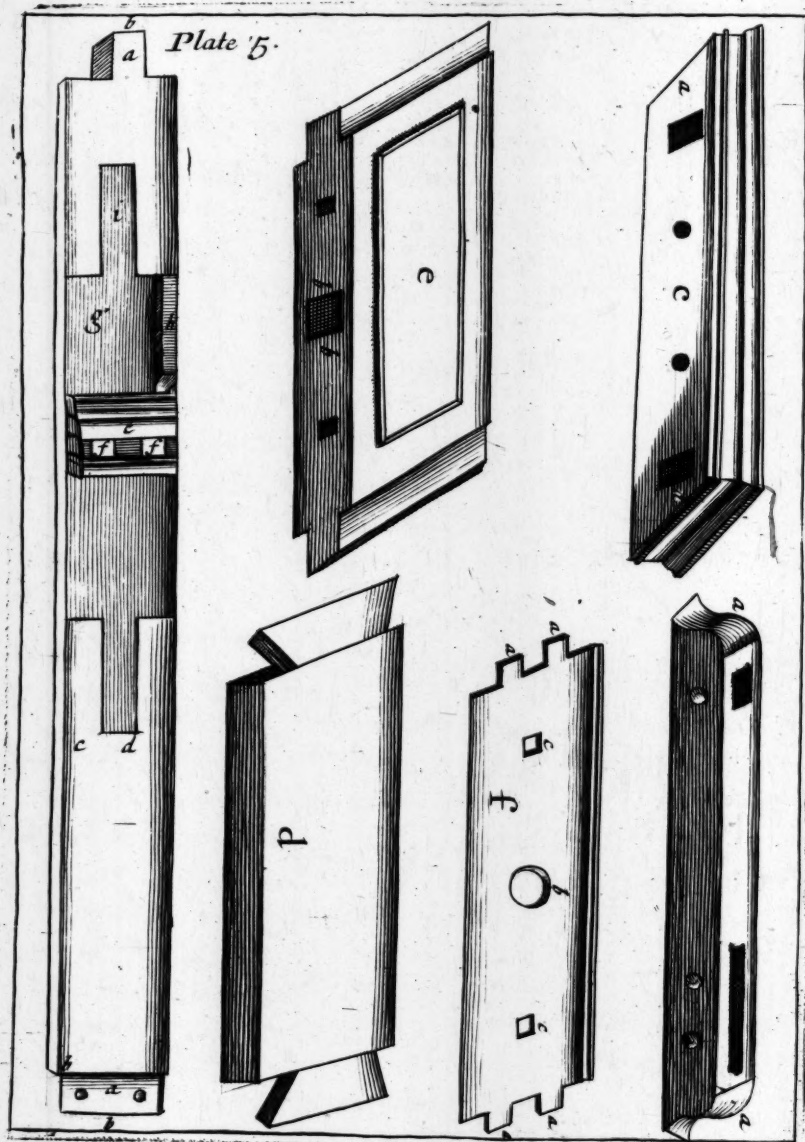
6. The *Frisket*.

7. The *Points*.

8. The *Point-Screws*.

All these several Members, by their Matter, Form and Position, do particularly contribute such an assistance







stance to the whole Machine, that it becomes an Engine managable and proper for its intended purpose.

But because the smallness of this altogether-Draft may obscure the plain appearance of many of these Parts; Therefore I shall give you a more particular description, and large delineation of every Member in the *Press*: And first of the Wooden work: Where, *Note*, that all the Fram'd Wooden-work of a *Press* is made of Good, Fine, Clean, Well-season'd Oak.

### ¶ 1. Of the Feet.

The *Feet* (marked *a a* in Plate 5.) are two Foot nine Inches and an half long, five Inches deep; and six Inches broad, and have their out-sides Tryed to a true square, as was taught, *Numb. 5. §. 15.* It hath (for ornament sake) its two ends bevil'd away in a Molding, from its upper-side to its lower, about four Inches within the ends; about four Inches and three quarters within each end of each Foot is made in the middle of the Breadth of the upper-side of the Foot a Mortise two Inches wide, to receive the *Tennants* of the lower-end of the *Cheek*, and the *Tennant* of the lower end of the *Hind-Post*: The Mortise for the *Cheek* is eight Inches long, viz. the Breadth of the *Cheek*: And the Mortise for the *Hind-Post* is four Inches long, viz. the square of the *Hind-Post*.

### ¶ 2. Of the Cheeks.

The *Cheeks* (marked *b b* in Plate 5) are five Foot and ten Inches long (besides the *Tennants* of the top and

and bottom) eight Inches broad, and four Inches and an half thick. All its Sides are tryed square to one another. It hath a *Tennant* at either end, its lower *Tennant* marked *a* to enter the Fore-end of the *Foot*, runs through the middle of the Breadth of the *Cheek*, which therefore is made to fit the Mortefs in the *Foot*, and is about four Inches long, and therefore reaches within an Inch of the bottom of the *Foot*; But the *Tennant* at the upper end of the *Cheek* marked *a*, is cut a-thwart the breadth of the *Cheek*, and therefore can have but four Inches and an half of Breadth; and its thicknes is two Inches, Its length is four Inches; so that it reaches into the Mortefs in the *Cap*, within half an Inch of the Top.

In the lower-end-*Tennant* is two holes bored, within an Inch and an half of either side, and within an Inch and an half of the Sholder, with a three quarter Inch *Augure*, to be pin'd into the *Feet* with an Iron Pin.

In the middle of the upper *Tennant*, and within an Inch and an half of the Sholder, is bored another hole, to Pin the *Tennant* into the *Cap*, also with an Iron Pin.

Between *b c* two Foot and half an Inch, and three Foot seven Inches of the Bottom Sholder of the *Tennant*, viz. from the top of the *Winter* to the under Sholder the *Till* rests upon, is cut flat away into the thicknes of the *Cheek*, three Inches in the Inside of the *Cheek*; so that in that place the *Cheek* remains but an Inch and an half thick: And the *Cheeks* are thus widened in this place, as well because the Dufftail *Tennants* of the *Winter* may go in between them, as also

so that the *Carriage* and *Coffin* may be made the wider.

Even with the lower Sholder of this flat cutting-in, is made a Duftail Mortels as at *d*, to reach eight Inches and an half, viz. the depth of the *Winter* below the said Sholder. This Mortels is three Inches wide on the inside the *Cheek*, and three Inches deep; But towards the inside the *Cheek*, the Mortels widens in a straight line from the said three Inches to five Inches, and so becomes a Duftail Mortels. Into this Duftail Mortels is fitted a Duftail *Tennant*, made at each end of the *Winter*.

Two Inches above the aforefaid Cutting-in, is another cutting-in of the same depth, from the Inside the *Cheek* as at *e*. This cutting-in is but one Inch broad at the farther side the *Cheek*, and an Inch and a quarter on the hither side the *Cheek*. The under side of this Cutting-in, is straight through the *Cheek*, viz. Square to the sides of the *Cheek*: But the upper side of this Cutting-in, is not square through the *Cheeks*, But (as aforefaid) is one quarter of an Inch higher on the fore-side the *Cheek* than it is on the further side; So that a Wedge of an Inch at one end, and an Inch and a quarter at the other end may fill this Cutting-in.

At an Inch within either side the *Cheek*, and an Inch below this Cutting-in, as at *f f*, is made a small Mortels an Inch and an half wide, to which two *Tennants* must be fitted at the ends of the *Till*, so that the *Tennants* of the *Till* being slid in through the Cutting-in aforefaid, may fall into these Mortelles; and a Wedge being made fit to the Cutting in, may press upon the *Tennants* of the *Till*, and force it down to keep it steady in its place. Here

Here we see remains a square Sholder or substance of Wood between two Cuttings-in ; But the under corner of this square Sholder is for Ornament-sake Bevil'd away and wrought into an *Ogee*.

At two Inches above the last Cutting-in, is another Cutting-in, but this Cutting-in goes not quite through the breadth of the *Cheek*, but stops at an Inch and an half within the further side the *Cheek* ; So that above the *Till* and its *Wedge* is another Sholder or substance of Wood, whose upper Corner is also Bevil'd away, and wrought to a Molding as the former.

The last Cutting-in is marked *g*, and is eight Inches and a quarter above the Sholder of the *Till*, that it may easily contain the depth of the *Head* ; The substance remaining is marked *h*. This Cutting-in is made as deep into the thickness of the *Cheek* as the former Cuttings-in are, *viz.* three Inches ; and the reason the *Cheek* is cut-in here, is, that the *Cheeks* may be wide enough in this place to receive the *Head*, and its *Tennants*, without un-doing the *Cap* and *Winter*.

Just above this Cutting-in is made a square Mortise in the middle of the *Cheek*, as at *i*, it is eight Inches long, and two Inches and an half wide, for the *Tenant* of the *Head* to play in.

Upon the fore-side of the *Cheek* is (for Ornament sake) laid a Molding through the whole length of the *Cheek* (a square at the Top and Bottom an Inch deep excepted) it is laid on the outer side, and therefore can be but an Inch broad ; Because the Cuttings-in on the inside leaves the substance of Stuff but an Inch

Inch and an half thick, and should the Moldings be made broader, it would be interrupted in the several Cuttings in, or else a square of a quarter of an Inch on either side the Molding could not be allowed, which would be ungraceful.

¶ 3. *Of the Cap marked c in Plate 5.*

The *Cap* is three Foot and one Inch long, four Inches and an half deep, and nine Inches and an half broad; But its fore-side is cut away underneath to eight Inches, *Viz.* the breadth of the *Cheeks*. Three quarters of an Inch above the bottom of the *Cap*, is a small *Facia*, which stands even with the thickness of the *Cheeks*; Half an Inch above that a Bead-Molding, projecting half an Inch over the *Facia*. Two Inches above that a broad *Facia*, also even with the thickness of the *Cheeks*; and an Inch and a quarter above that is the upper Molding made projecting an Inch and an half over the two *Facia's* aforesaid, and the thickness of the *Cheeks*.

Each end of the *Cap* projects three Inches quarter and half quarter over the *Cheeks*, partly for Ornament, but more especially that substance may be left on either end beyond the *Mortesses* in the *Caps*; and these two ends have the same Molding laid on them that the fore-side of the *Cap* hath.

Within two Inches and half quarter of either end, on the under-side the *Cap* is made a square *Mortess* two Inches wide, and four Inches and an half long, *viz.* the thickness of the *Cheek* inwards, as at *aa*, to receive the Top *Tennants* of the *Cheeks*; which Top

H

*Tennants*



*Tennants* are with an Iron Pin (made tapering of about three quarters of an Inch thick) pin'd into the Mortes of the *Cap*, to keep the *Cheeks* steady in their position.

¶ 4. Of the *Winter* marked d in Plate 5.

The Length of the *Winter* besides the *Tennants*, is one Foot nine Inches and one quarter of an Inch ; The Breadth of the *Winter* eight Inches, viz. the Breadth of the *Cheek*, and its depth nine Inches ; all its sides are tryed square ; But its two ends hath each a *Duftail-Tenant* made through the whole depth of the *Winter*, to fit and fall into the *Duftail Mortesses* made in the *Cheeks* : These *Duftail-Tennants* are intended to do the Office of a *Summer*, Because the spreading of the ends of these two *Tennants* into the spreading of the *Mortesses* in the *Cheeks*, keeps the two *Cheeks* in a due distance, and hinders them from flying asunder.

But yet I think it very convenient to have a *Summer* also, the more firmly and furer to keep the *Cheeks* together ; This *Summer* is only a Rail *Tennanted*, and let into *Mortesses* made in the inside of the *Cheeks*, and Screwed to them as the Rails described, Numb. 15. §. 4. are Screwed into the Stiles of the *Cafe-Frame* ; Its depth four Inches and an half, and its breadth eight Inches, viz, the breadth of the *Cheeks*.

¶ 5. Of

## ¶ 5. Of the Head marked e in Plate 5.

The length of the *Head* besides the *Tennant* at either end, is one Foot nine Inches and one quarter of an Inch ; The breadth eight Inches and an half, and its depth eight Inches. The Top, Bottom and Hind-sides are tryed Square, but the foreside projects half an Inch over the Range of the fore-sides of the *Cheeks*; in which Projecture is cut a Table with a hollow Molding about it, two Inches distant from all the sides of the fore-side of the *Head* : Its *Tennants* are three Inches Broad, and are cut down at either end, from the top to the bottom of the *Head*, and made fit to the Mortesses in the *Cheeks*, that they may slide tight, and yet play in them.

In the under-side of the *Head* is cut a square Hole, (as at *a*,) about four Inches square, and three Inches and an half deep, into which the *Brass-Nut* is to be fitted : And to keep this *Nut* in its place (lest the weight of it should make it fall out) is made on either side the square hole, at about half an Inch distance from it, (as at *bb*) a square Hole quite through the Top and Bottom of the *Head* about three quarters of an Inch wide ; and into this square Hole is fitted a square piece of Iron to reach quite through the *Head*, having at its under-end a Hook turned square to clasp upon the under-side of the *Nut* ; and on its upper-end a Male-Screw reaching about an Inch above the upper-side of the *Head*, which by the help of a Female-screw made in an Iron *Nut*, with Ears to it to turn it about draws the *Clasp* at the bottom of the Iron *Shank*

close against the *Nut*, and so keeps it from falling out.

In the middle of the wide square Hole that the *Nut* is let into, is bored a round Hole through the top of the *Head*, of about three quarters of an Inch wide, for the *Press-man* to pour *Oyl* in at so oft as the *Nut* and *Spindle* shall want *Oyling*.

At three Inches from either end of the *Head* (as at *cc*) is bored a Hole quite through the top and bottom of the *Head*, which holes have their under ends squar'd about two Inches upwards, and these squares are made so wide as to receive a square Bar of Iron three quarters of an Inch square; But the other part of these Holes remain round: Into these Holes two Irons are fitted called the *Screws*.

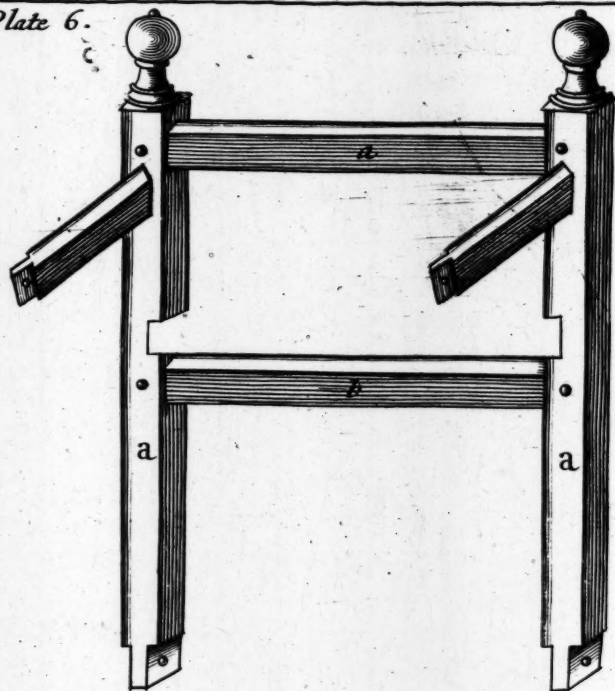
The Shanks of these *Screws* are made so long as to reach through the *Head* and through the *Cap*: At the upper-end of these Shanks is made Male-screws, and to these Male-screws, Iron Female-screws are fitted with two Ears to twist them the easier about.

So much of these Iron Shanks as are to lye in the square Hole of the *Head* aforesaid, are also squared to fit those square Holes, that when they are fitted and put into the Holes in the *Head*; they may not twist about.

To the lower-ends of these Iron-Shanks are made two Square, Flat Heads, which are let into and buried in the under-side of the *Head*; And upon the Sholders of those two Flat Heads, rests the weight of the *Head* of the *Press*; And by the *Screws* at the Upper end of the Shanks are hung upon the upper-side of the *Cap*, and Screwed up or let down as occasion requires.



Plate 6.



b





¶ 6. *Of the Till, marked f in Plate 5.*

The *Till* is a Board about one Inch thick, and is as the *Head* and *Winter*, one Foot nine Inches and a quarter long, besides the *Tennants* at either end; Its Breadth is the Breadth of the *Cheeks*, viz. eight Inches; It hath two *Tennants* at either end as at *a a a a*, each of them about an Inch and an half long, and an Inch and an half broad, and are made at an Inch distance from the fore and Back-side, so that a space of two Inches is contained in the middle of the ends between the two *Tennants*; these *Tennants* are to be laid in the Mortesses in the *Cheeks* delineated at *f f* in Plate 5. and described in this §. 10. ¶. 2.

In its middle it hath a round Hole about two Inches and an half wide, as at *b*, for the Shank of the *Spindle* to pass through.

At seven Inches and a quarter from either end, and in the middle between the Fore and Back-side, is made two square Holes through the *Till*, as at *c c*, for the Iron *Hose* to pass through.

¶ 7. *Of the Hind-Posts marked a a in Plate 6.*

At one Foot distance from the Hind-sides of the *Cheeks* are placed upright to *Hind-Posts*, they are three Foot and four Inches long besides the *Tennants*, which *Tennants* are to be placed in the Mortesses in the hinder ends of the *Feet*; Their thickness is four Inches on every side, and every side is tryed square;

H 3

But

But within eight Inches of the top is turned a round Ball with a Button on it, and a Neck under it, and under that Neck a straight Plinth or Base : This turn'd work on the top is only for Ornament sake.

There are six *Rails* fitted into these *Hind Posts*, two behind marked *a b*, one of them standing with its upper side at two Inches below the turned Work, the other having its upper-side lying level with the upper-side of the *Winter*.

These two *Rails* are each of them *Tennanted* at either end, and are made so long, that the out-sides of the *Hind-Posts* may stand Range or even with the outer-sides of the *Cheeks* ; These *Tennants* at either end are let into Mortesses made in the in-sides of the *Hind-Posts*, and Pin'd up with half Inch wooden Pins, Glewed in, as was shewn Vol. 1. Numb. 5. §. 17. Because the two *Hind-Posts* need not be separated for any alteration of the *Press*.

The two *Side-Rails* on either side the *Press* are *Tennanted* at each end, and let into Mortesses made in the *Cheeks* and *Hind-Posts*, so as they may stand Range with the outer-sides of the *Cheeks* and *Hind-Posts* ; But the *Tennants* that enter the Mortesses in the *Cheeks* are not pin'd in with Wooden Pins, and Glewed, because they may be taken assunder if need be ; But are Pin'd in with Iron Pins, made a little tapering towards the entering end, so as they may be driven back when occasion serves to alter the *Press* : And the *Tennants* that enter the Mortesses in the *Hind-Posts* are fastned in by a Female-screw, let in near the end of the *Rail*, which receives a Male-screw thrust through the *Hind Posts*, even as I shew'd in

§. 4. the *Fore* and *Back-Rails* of the *Cafe-Frames* was.

¶ 8. *Of the Ribs marked b in Plate 6.*

The *Ribs* lye within a Frame of four Foot five Inches long, one Foot eleven Inches broad; its two *End-Rails* one Inch and an half thick, its *Side-Rails* two Inches and an half thick; and the breadth of the *Side* and *End-Rails* two Inches and an half. But the *Side-Rails* are cut away in the in-side an Inch and an half towards the outer sides of the *Rails*, and an Inch deep towards the Bottom sides of the *Rails*, so that a square *Cheek* on either *Side-Rail* remains. This cutting down of the *Outer-Rails* of the *Frame* is made, because the Planck of the *Carriage* being but one Foot eight Inches an an half broad, may easily slide, and yet be gaged between these *Cheeks* of the *Rail*, that the *Cramp-Irons* Nailed under the *Carriage Planck* joggle not on either side off the *Ribs*, as shall more fully be shewn in the next §.

Between the two *Side Rails* are framed into the two *End-Rails* the two *Wooden-Ribs* two Inches and an half broad, and an Inch and an half thick; they are placed each at an equal distance from each *Side-Rail*, and also at the same distance between themselves. Upon these two *Ribs* are fast Nailed down the *Iron-Ribs*, of which more shall be said when I come to speak of the Iron-work.

¶ 9. *Of*

¶ 9. *Of the Carriage, Coffin and its Planck, marked a in Plate 7.*

The *Planck* of the *Carriage* is an Elm-Planck an Inch and an half thick, four Foot long, and one Foot eight Inches and three quarters broad; upon this *Planck* at its fore-end is firmly Nailed down a square Frame two Foot four Inches long, one Foot ten Inches broad, and the thickness of its Sides two Inches and an half square: This Frame is called the *Coffin*, and in it the *Stone* is *Bedded*.

Upon each of the four Corners of this *Coffin* is let in and fastned down a square Iron Plate as at *a a a a*, with Return Sides about six Inches long each side, half a quarter of an Inch thick, and two Inches and a quarter broad; upon the upper outer-sides of each of these Plates is fastned down to them with two or three Rivets through each side, another strong Iron half an Inch deep, and whose outer Angles only are square, but the Inner Angles are obtuse, as being sloped away from the Inner-Angle towards the farther-end of each inner-side, so as the *Quoins* may do the Office of a Wedge between each inner-side and the *Chase*.

The Plates of these Corners (as I said) are let in on the outer-Angles of the upper-side of the Frame of the *Coffin*, so as the upper-sides of the Plates lye even with it, and are Nailed down, or indeed rather Rivetted down through the bottom and top-sides of the Frame of the *Coffin*, because then the upper-sides of the Holes in the Iron Plates being square Bored

Bored (that is, made wider on the upper side of the Plate, as I shall shew when I come to the making of *Mathematical Instruments*) the ends of the Shanks of the Iron Pins may be so battered into the Square-boring, that the whole Superficies of the Plate when thus Rivetted shall be smooth, which else with the exturberancies of Nail-heads would hinder the free sliding of the *Quoins*.

At the hinder end of the Frame of the *Coffin* are fastned either with strong Nails, Rivets, or rather Screws, two Iron *Half-Joynts*, as at *b b*, which having an Iron Pin of almost half an Inch over put through them; and two *Match half-Joynts* fastned on the Frame of the *Tympan*, these two *Match-half-Joynts* moving upon the Iron Pin aforesaid, as on an *Axis*, keeps the *Tinpan* so truly gaged, that it always falls down upon the *Form* in the place, and so keeps *Register* good, as shall further be shewed in proper place.

Behind the *Coffin* is Nailed on to its outside, a Quarter, as at *c c* this Quarter is about three Inches longer than the breadth of the *Coffin*, it hath all its sides two Inches over, and three of them square; but its upper side is hollowed round to a Groove or Gutter an Inch and an half over. This Gutter is so Nailed on, that its hither end standing about an Inch higher than its further end, the Water that descends from the *Tympan* falling into it is carried away on the farther side the *Coffin* by the declivity of the farther end of the Gutter, and so keeps the Planck of the *Carriage* neat and cleanly, and preserves it from rotting.



Parallel to the outer sides of the hind part of the Plank of the *Carriage*, at three Inches distance from either side, is Nailed down on the upper side of the Plank two Female-Duftail Grooves, into which is fitted (so as they may slide) two Male-Duftails made on the two Feet of the *Gallows* (as at *dd*) that the *Tinpan* rests upon; and by the sliding forward or backward of these Duftail Feet, the heighth of the *Tinpan* is raised or depressed according to the Reason or Fancy of the *Press-man*.

At three Inches from the hinder Rail of the *Coffin*, in the middle, between both sides of the Plank, is cut an Hole four Inches square (as at *ee*) and upon the hither and farther side of this Hole is fastened down on each side a *Stud* made of Wood (as at *ff*) and in the middle of these two *Studs* is made a round Hole about half an Inch over, to receive the two round ends of an Iron Pin; which Iron Pin, though its ends be round, is through the middle of the Shank square, and upon that square is fitted a round *Wooden-Rowler* or *Barrel*, with a Shoulder on either side it, to contain so much of the *Girt* as shall be rowled upon it; And to one end of the *Rowler* is fastened an Iron *Circle* or *Wheel*, having on its edge *Teeth* cut to stop against a *Clicker*, when the *Rowler* with an Iron Pin is turned about to strain the *Girt*.

#### ¶ 10. Of the Tympan and Inner-Tympan, marked b in Plate 7.

The *Tympan* is a square Frame, three sides whereof are Wood, and the fourth Iron. Its width is one Foot

Foot eight Inches, its length two Foot two Inches; the breadth of the wooden Sides an Inch and an half, and the depth one Inch.

On its short Wooden-side, viz. its Hind-end, at the two Corners is Rivetted an Iron *Match-Joynt*, to be pinned on to another *Half joynt* fastned on the *Hind-Rail* of the *Coffin*.

The other end, viz. the Fore-end of the *Tympan* is made of Iron, with a square *Socket* at either end for the Wooden ends of the *Tympan* to fit and fasten into. This Iron is somewhat thinner and narrower than an ordinary Window-Casement.

Upon the outer edge of this Iron, about an Inch and an half off the ends of it, is made two Iron *Half-joynts* to contain a Pin of about a quarter of an Inch over, which Pin entring this *half-joynt*, and a *match Half-joynt* made upon the *Frisket*, serves for the *Frisket* to move truly upon.

In the middle of each long *Rail* of the *Tympan*, is made through the top and bottom an Hole half an Inch square, for the square Shanks of the *Point-Screws* to fit into.

The like Holes are also made in the *Tympan*, at one third part of its length from the Fore-end or *Frisket-joynt*, to place the *Point Screws* in; when a *Twelves*, *Eighteens*, &c. is wrought.

Into the Inner-side of this *Tympan* is fitted the *Inner-Tympan*, whose three sides are also made of Wood, and its fourth side of Iron, as the *Tympan*. but without *joynts*; it is made so much shorter than the *Outer-Tympan*, that the outer edge of the Iron of the *Inner Tympan* may lye within the inner edge of the Iron on the *Outer-Tym-*

*pan* ; and it is made so much narrower than the inside of the *Tympan*, that a convenient room may be allowed to paste a *Vellom* between the inside of the *Tympan*, and the outside of the *Inner Tympan*.

About the middle, through the hither-side of the *Inner Tympan*, is let in and fastned an Iron Pin about a quarter of an Inch over, and stands out three quarters of an Inch upon the hither out-side of the *Inner-Tympan*, which three quarters of an Inch Pin fits into a round hole made in the inner-side of the *Tympan*, to gage and fit the *Inner-Tympan* right into the *Tympan* ; for then by the help of an Iron turning *Clasp* on the further side the *Tympan*, the *Inner-Tympan* is kept firmly down and in its position.

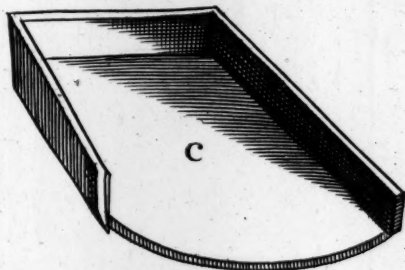
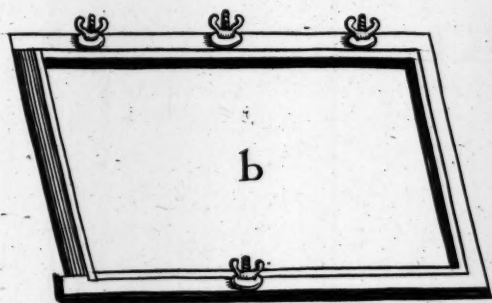
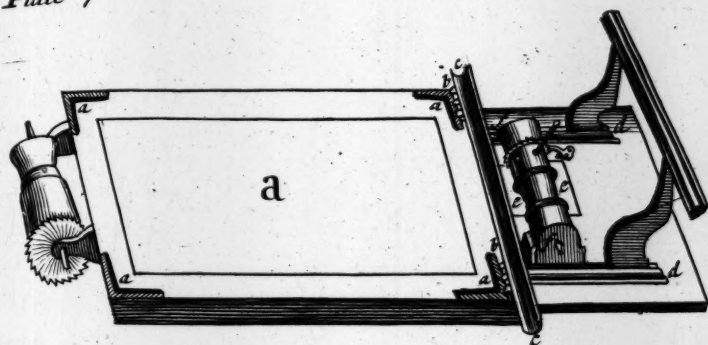
¶ 11. *Of the Inck-Block, Slice, Brayer, and Catch of the Bar, marked c d e f in Plate 7.*

To the *Rail* between the hither *Cheek* and *Hind-Post* is fastned the *Inck-Block*, which is a Beechen-board about thirteen Inches long, nine Inches broad, and commonly about two Inches thick, and hath the left hand outer corner of it cut away; it is Railed in on its farther and hinder-sides, and a little above half the hither-side, with Wainscot-Board about three quarters of an Inch thick, and two Inches and an half above the upper-side the board of the *Inck-Block*. It is described in Plate 7. at c.

The *Brayer* marked *a* is made of *Beech*: It is turned round on the sides, and flat on the bottom, its length

is

Plate 7.







is about three Inches, and its diameter about two Inches and an half; it hath an Handle to it about four Inches long. Its Office is to rub and mingle the *Inck* on the *Inck-Block* well together.

The *Slice* is a little thin Iron *Shovel* about three or four Inches broad, and five Inches long; it hath an Handle to it of about seven Inches long. Near the *Shovel* through the Handle is fitted a small Iron of about two Inches long standing Perpendicular to both the sides of the Handle, and is about the thickness of a small Curtain-Rod. It is described at e.

The *Catch* of the *Bar* described at f is a piece of Wood two Inches thick, four Inches broad, and ten Inches long; The top of it is a little Bevil'd or Slop'd off, that the *Bar* may by its *Spring* fly up the Bevil till it stick. This Bevil projects three Inches over its straight Shank, which reaches down to the bottom; in the middle of this Shank, through the fore and back-side, is a Mortise made from within an Inch of the Rounding to an Inch and an half of the bottom; This Mortise is three quarters of an Inch wide, and hath an Iron Pin with a Shoulder at one end fitted to it, so as it may slide from one end of the Mortise to the other. At the other end of the Iron Pin is made a Male Screw which enters into a Female Iron Screw let into the further *Cheek* of the *Press*; so that the *Catch* may be Screwed close to the *Cheek*, as shall further be spoken to hereafter.

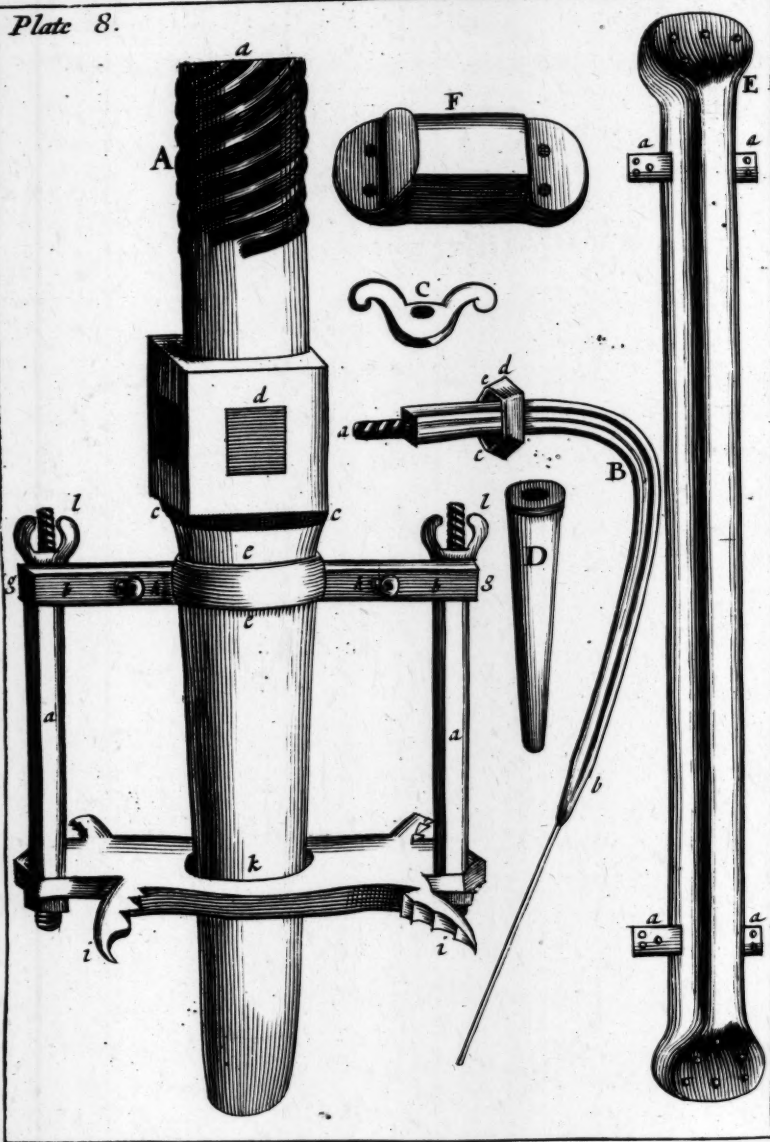
¶ 12. *Of the Iron-work, and first of the Spindle marked A in Plate 8.*

From the Top to the *Toe* of the *Spindle*, viz. from *a* to *b* is sixteen Inches and a half, the length of the Cilinder the *Worms* are cut upon is three Inches and a quarter, and the diameter of that Cilinder two Inches and a quarter; between the bottom of the *Worms* and top of the Cube one Inch and an half; the Cube marked *c c c c* is two Inches and three quarters, the square *Eye* at *d* in the middle of the Cube is an Inch and a quarter through all the sides of the Cube; one Inch under the Cube at *e* is the *Neck* of the *Spindle*, whose diameter is two Inches, It is one Inch between the two shoulders, viz. the upper and under shoulders of the *Neck* at *e e*; so that the Cilinder of the *Neck* is one Inch long; the very bottom of the *Spindle* at *b* is called the *Toe*, it is made of an Hemispherical form, and about one Inch in diameter; This *Toe* should be made of *Steel*, and well Temper'd, that by long or careless usage, the point of pressure wear not towards one side of the *Toe*, but may remain in the Axis of the *Spindle*.

§. 11. *Of*



Plate 8.



## §. 11. Of the Worms of the Spindle.

I promised at the latter end of *Numb. 2.* to give a more copious account than there I did of making *Worms*, when I came to exercise upon *Printing-Press Spindles*; and being now arrived to it, I shall here make good my promise.

¶ 1. The *Worms* for *Printing-Press Spindles* must be projected with such a declivity, as that they may come down at an assigned progress of the *Bar*.

The assigned progress may be various, and yet the *Spindle* do its office: For if the *Cheeks* of the *Press* stand wide assunder, the sweep or progress of the same *Bar* will be greater than if they stand nearer together.

It is confirm'd upon good consideration and Reason as well as constant experience, that in a whole Revolution of the *Spindle*, in the *Nut*, the *Toe* does and ought to come down two Inches and an half; but the *Spindle* in work seldom makes above one quarter of a Revolution at one *Pull*, in which sweep it comes down but half an Inch and half a quarter of an Inch; and the reason to be given for this coming down, is the squeezing of the several parts in the *Press*, subject to squeeze between the Mortesses of the *Winter* and the Mortesses the *Head* works in; and every Joynt between these are subject to squeeze by the force of a *Pull*. As first, The *Winter* may squeeze down into its Mortess one third part of the thickness of a *Scabbord*. (Allowing a *Scabbord* to be half a *Nomparel* thick.) Secondly, The *Ribs* squeeze closer to



the *Winter* one *Scabbord*. Thirdly, The *Iron-Ribs* to the *Wooden-Ribs* one *Scabbord*. Fourthly, The *Cramp-Irons* to the *Planck* of the *Coffin* one *Scabbord*. Fifthly, The *Planck* it self half a *Scabbord*. Sixthly, The *Stone* to the *Planck* one *Scabbord*. Seventhly, The *Form* to the *Stone* half a *Scabbord*. Eighthly, The *Justifiers* in the *Mortels* of the *Head* three *Scabbords*. Ninthly, The *Nut* in the *Head* one *Scabbord*. Tenthly, The *Paper*, *Tympans* and *Blankers* two *Scabbords*. Eleventhly, Play for the *Irons* of the *Tympans* four *Scabbords*. Altogether make fifteen *Scabbords* and one third part of a *Scabbord* thick, which (as aforesaid) by allowing two *Scabbords* to make a *Nomparel*, and as I shewed in *Vol. 2. Numb. 2. §. 2.* One hundred and fifty *Nomparels* to make one Foot, gives twelve and an half *Nomparels* for an Inch; and consequently twenty five *Scabbords* for an Inch; so by proportion, fifteen *Scabbords* and one third part of a *Scabbord*, gives five eighth parts of an Inch, and a very small matter more, which is just so much as the *Toe* of the *Spindle* comes down in a quarter of a Revolution.

This is the Reason that the coming down of the *Toe* ought to be just thus much; for should it be less, the natural Spring that all these Joynts have, when they are unsqueez'd, would mount the *Irons* of the *Tympans* so high, that it would be troublesom and tedious for the *Press-man* to Run them under the *Plat-tin*, unless the *Cheeks* stood wider assunder, and consequently every sweep of the *Bar* in a *Pull* exceed a quarter of a Revolution, which would be both laborious for the *Press-man*, and would hinder his usual riddance of Work.

I shew'd

I shew'd in *Numb. 2. fol. 31, 32, 33, 34, 35.* the manner of making a Screw in general; but assigned it no particular Rise; which for the aforesaid reason, these *Printing-Press Screws* are strictly bound to have: Therefore its assigned Rise being two Inches and an half in a Revolution, This measure must be set off upon the Cilindrick Shank, from the top towards the Cube of the *Spindle*, on any part of the *Cilinder*, and there make a small mark with a fine *Prick-Punch*, and in an exact Perpendicular to this mark make another small mark on the top of the *Cilinder*, and laying a straight *Ruler* on these two marks, draw a straight line through them, and continue that line almost as low as the Cube of the *Spindle*. Then divide that portion of the straight line contained between the two marks into eight equal parts, and set off those equal parts from the two Inch and half mark upwards, and then downwards in the line so oft as you can: Divide also the Circumference of the Shank of the *Cilinder* into eight equal parts, and draw straight lines through each division, parallel to the first upright line; and describe the *Screw* as you were directed in the afore-quoted place; so will you find that the revolution of every line so carried on about the Shank of the *Cilinder*, will be just two Inches and an half off the top of the Shank: which measure and manner of working may be continued downward to within an Inch and an half of the Cube of the *Spindle*. This is the Rule and Measure that ought to be observ'd for ordinary *Presses*: But if for some by-reasons the aforesaid Measure of two Inches and an half must be varied, then the varied Measure

must be set off from the top of the Cilinder, and working with that varied Measure as hath been directed, the *Toe* of the *Spindle* will come down lower in a revolution if the varied Measure be longer, or not so low if the varied Measure be shorter.

There is a Notion vulgarly accepted among Workmen, that the *Spindle* will Rise more or less for the number of *Worms* winding about the Cilinder; for they think, or at least by tradition are taught to say, that a *Three-Worm'd Spindle* comes faster and lower down than a *four-Worm'd Spindle*: But the opinion is false; for if a *Spindle* were made but with a *Single-Worm*, and should have this Measure, viz. Two Inches and an half set off from the top, and a *Worm* cut to make a Revolution to this Measure, it would come down just as fast, and as low, as if there were two, three, four, five or six *Worms*, &c. cut in the same Measure: For indeed, the numbers of *Worms* are only made to preserve the *Worms* of the *Spindle* and *Nut* from wearing each other out the faster; for if the whole stress of a *Pull* should bear against the Sholder of a single *Worm*, it would wear and shake in the *Nut* sooner by half than if the stress should be borne by the Sholders of two *Worms*; and so proportionably for three, four, five *Worms*, &c.

But the reason why four *Worms* are generally made upon the *Spindle*, is because the Diameters of the *Spindle* are generally of this propos'd size; and therefore a convenient strength of Mettal may be had on this size for four *Worms*; But should the Diameter of the *Spindle* be smaller, as they sometimes are when the *Press* is designed for small Work, only three *Worms* will

will be a properer number than four ; because when the Diameter is small, the thickness of the *Worms* would also prove small, and by the stress of a *Pull* would be more subject to break or tear the *Worms* either of the *Spindle* or *Nut*.

And thus I hope I have performed the promise here I made at the latter end of *Numb. 2.* Whether I refer you for the breadth, and reason of the breadth of the *Worm*.

¶ 13. *Of the Bar marked B in Plate 8.*

This *Bar* is Iron, containing in length about two Foot eight Inches and an halt, from *a* to *b*, and its greatest thickness, except the Sholder, an Inch and a quarter ; The end *a* hath a Male-Screw about an Inch Diameter and an Inch long, to which a *Nut* with a Female-Screw in it as at *C* is fitted. The Iron *Nut* in which this Female-Screw is made, must be very strong, viz. at least an Inch thick, and an Inch and three quarters in Diameter ; in two opposite sides of it is made two Ears, which must also be very strong, because they must with heavy blows be knock't upon to draw the Sholder of the square shank on the *Bar*, when the square Pin is in the *Eye* of the *Spindle* close and steddly up to the Cube on the *Spindle*. The square Pin of the *Bar* marked *c* is made to fit just into the *Eye*, through the middle of the Cube of the *Spindle*, on the hither end of this square Pin is made a Sholder or stop to this square Pin, as at *d*. This Sholder must be Filed exactly Flat on all its four in-sides, that they may be drawn close and tight up

to any flat side of the Cube on the *Spindle*; It is two Inches square, that it may be drawn the firmer, and stop the *Steddyer* against any of the flat sides of the said Cube, when it is hard drawn by the strength of the Female-Screw in the aforesaid *Nut* at C. The thickness from *d* to *e* of this Sholder is about three quarters of an Inch, and is Bevil'd off towards the *Handle* of the *Bar* with a small Molding.

The substance of this *Bar*, as aforesaid, is about an Inch and a quarter; but its Corners are all the way flatted down till within five Inches of the end: And from these five Inches to the end, it is taper'd away, that the *Wooden-Handle* may be the stronger forced and fastned upon it.

About four Inches off the Sholder, the *Bar* is bow'd beyond a right Angle, yet not with an Angle, but a Bow, which therefore lies ready to the *Press-man's* Hand, that he may Catch at it to draw the *Wooden-Handle* of the *Bar* within his reach.

This *Wooden-Handle* with long Working grows oft loose; but then it is with hard blows on the end of it forced on again, which oft splits the *Wooden-Handle* and loosens the square Pin at the other end of the *Bar*, in the *Eye* of the *Spindle*: To remedy which inconvenience, I used this Help, viz. To weld a piece of a Curtain-Rod as long as the *Wooden-Handle* of the *Bar*, to the end of the Iron *Bar*, and made a Male-screw at the other end with a Female-screw to fit it; Then I bored an hole quite through the *Wooden-Handle*, and Turn'd the very end of the *Wooden-Handle* with a small hollow in it flat at the bottom, and deep enough to bury the Iron-*Nut* on the end of the *Curtain-*  
handle.



tain-Rod, and when this Curtain-Rod was put through the Hollow in the *Wooden Handle* and Screwed fast to it at the end, it kept the *Wooden Handle*, from flying off; Or if it loosened, by twirling the *Nut* once or twice more about, it it was fastned again.

#### ¶ 14. Of the Hose, Garter, and Hose-Hooks.

The *Hose* are the upright Irons in Plate 8. at *aa*, They are about three quarters of an Inch square, both their ends have Male-screws on them; The lower end is fitted into a square Hole made at the parting of the *Hose Hooks*, which by a square *Nut* with a Female-screw in it, is Screwed tight up to them; Their upper ends are let into square Holes made at the ends of the *Garter*, and by *Nuts* with Female-Screws in them, and Ears to turn them about as at *ll* are drawn up higher, if the *Plattin-Cords* are too loose; or else let down lower if they are to tight: These upper Screws are called the *Hose-Screws*.

The *Garter* (but more properly the *Collar*) marked *bb*, is the round Hoop incompassing the flat Groove or Neck in the Shank of the *Spindle* at *ee*; This round Hoop is made of two half round Hoops, having in a Diametrical-line without the Hoop square Irons of the same piece proceeding from them, and standing out as far as *gg*; These Irons are so let into each other, that they comply and run Range with the square Sholders at both ends, wherein square Holes are made at the ends of the *Hose*. They are Screwed together with two small Screws, as at *hh*.

The

The four *Hose-Hooks* are marked *iiii*, They proceed from two Branches of an Iron Hoop at *k* encompassing the lower-end of the *Spindle*, on either Corner of the Branch, and have notches filled in their outer-sides as in the Figure, which notches are to contain several Turns of *Whip-cord* in each notch, which *Whip-cord* being also fastned to the *Hooks* on the *Plattin*, holds the *Plattin* tight to the *Hooks* of the *Hose*.

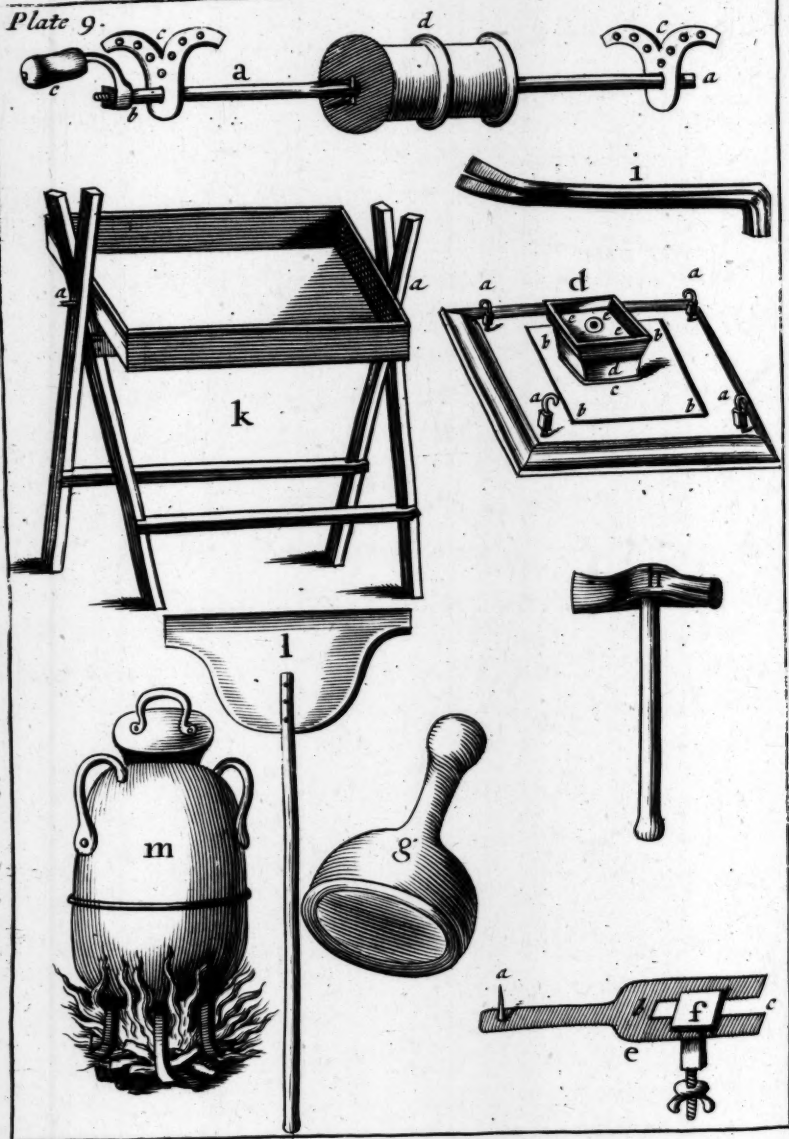
### ¶ 15. *Of the Ribs, and Cramp-Irons.*

The *Ribs* are delineated in Plate 8. at E, they are made of four-square Irons the length of the *Wooden-Ribs* and *End-Rails*, viz. Four Foot five Inches long, and three quarters of an Inch square, only one end is batter'd to about a quarter of an Inch thick, and about two Inches and an half broad, in which battering four or five holes are Punch't for the nailing it down to the *Hind-Rail* of the *Wooden-Ribs*. The Fore-end is also batter'd down as the Hind-end, but bound downwards to a square, that it may be nailed down on the outer-side of the *Fore-Rail* of the *Wooden-Ribs*.

Into the bottom of these *Ribs*, within nine Inches of the middle, on either side is made two Female-Dustails about three quarters of an Inch broad, and half a quarter of an Inch thick, which Female-Dustails have Male-Dustails as at *a a a a* fitted stiff into them; about an Inch and three quarters long; and these Male-Dustails have an hole punched at either end, that when they are fitted into the Female-Dustails in the *Ribs*, they may in these Holes be Nailed down the firmer to the *Wooden-Ribs*. These



Plate 9.



These *Ribs* are to be between the upper and the under side exactly of an equal thickness, and both to lye exactly Horizontal in straight lines; For irregularities will both Mount and Sink the *Cramp-Irons*, and make them *Run* rumbling upon the *Ribs*.

The upper-sides of these *Ribs* must be purely Smooth-fil'd and Pollish'd, and the edges a little Bevil'd roundish away, that they may be somewhat Arching at the top; because then the *Cramp-Irons* *Run* more easily and ticklishly over them.

The *Cramp-Irons* are marked F in Plate 8. They are an Inch and an half long besides the Battering down at both ends as the *Ribs* were; They have three holes Punched in each Battering down, to Nail them to the *Planck* of the *Coffin*; They are about half an Inch deep, and one quarter and an half thick; their upper-sides are smoothed and rounded away as the *Ribs*.

¶ 16. Of the Spindle for the Rounce, described in Plate 9. at a.

The *Axis* or *Spindle* is a straight Bar of Iron about three quarters of an Inch square, and is about three Inches longer than the whole breadth of the Frame of the *Ribs*, viz. two Foot two Inches: The farther end of it is Filed to a round Pin (as at *a*) three quarters of an Inch long, and three quarters of an Inch in Diameter, the hither end is filed away to such another round Pin; but is two Inches and a quarter long (as at *b*); at an Inch and a quarter from this end is Filed a Square Pin three quarters of an Inch long, and



within half an Inch of the end is Filed another round Pin, which hath another Male-Screw on it, to which is fitted a square Iron *Nut* with a Female-Screw in it.

On the Square Pin is fitted a *Winch* somewhat in form like a Jack-winch, but much stronger; the *Eye* of which is fitted upon the Square aforesaid, and Screwed up tight with a Female Screw. On the straight Shank of this Winch is fitted the *Rounce*, marked *e*.

The round ends of this *Axis* are hung up in two Iron-Sockets (as at *c c*) fastned with Nails (but more properly with Screws) on the outside the Wooden Frame of the *Ribs*.

The *Girt-Barrel* marked *d* is Turned of a Piece of Maple or Alder-wood, of such a length, that it may play easily between the two Wooden *Ribs*; and of such a diameter, that in one revolution of it, such a length of *Girt* may wind about it as shall be equal to half the length contained between the fore-end Iron of the *Tympan*, and the inside of the Rail of the *Inner-Tympan*; because two Revolutions of this *Barrel* must move the *Carriage* this length of space.

This *Barrel* is fitted and fastned upon the Iron *Axis*, at such a distance from either end, that it may move round between the Wooden *Ribs* aforesaid.

#### ¶ 17. Of the Press-Stone.

The *Press-Stone* should be Marble, though sometimes Master *Printers* make shift with Purbeck, either because they can buy them cheaper, or else because they can neither distinguish them by their appearance, or know their different worths.

Its thickness must be all the way throughout equal

qual, and ought to be within one half quarter of an Inch the depth of the inside of the *Coffin*; because the matter it is *Bedded* in will raise it high enough. Its length and breadth must be about half an Inch less than the length and breadth of the inside of the *Coffin*: Because *Justifiers* of Wood, the length of every side, and almost the depth of the *Stone*, must be thrust between the insides of the *Coffin* and the outsides of the *Stone*, to Wedge it tight and steady in its place; after the *Press-man* has *Bedded* it. Its upper-side, or Face must be exactly straight and smooth.

I have given you this description of the *Press-Stone*, because they are thus generally used in all *Printing-Houses*: But I have had so much trouble, charge and vexation with the often breaking of *Stones*, either through the carelessness or unskillfulness (or both) of *Press-men*, that necessity compell'd me to consider how I might leave them off; and now by long experience I have found, that a piece of *Lignum vitæ* of the same size, and truly wrought, performs the office of a *Stone* in all respects as well as a *Stone*, and eases my mind, of the trouble, charge and vexation aforesaid, though the first cost of it be greater.

¶ 18. Of the *Plattin* marked d in Plate 9.

The *Plattin* is commonly made of Beechen Planck, two Inches and an half thick, its length about fourteen Inches, and its breadth about nine Inches. Its sides are Tryed Square, and the Face or under-side of the *Plattin* Plained exactly straight and smooth. Near the four Corners on the upper-side, it hath

four Iron *Hooks* as at *a a a a*, whose *Shanks* are Wormed in.

In the middle of the upper side is let in and fastened an Iron Plate called the *Plattin Plate*, as *b b b b*, a quarter of an Inch thick, six Inches long, and four Inches broad; in the middle of this Plate is made a square Iron Frame about half an Inch high, and half an Inch broad, as at *c*. Into this square Frame is fitted the *Stud* of the *Plattin Pan*, so as it may stand steddy, and yet to be taken out and put in as occasion may require.

This *Stud* marked *d*, is about an Inch thick, and then spreads wider and wider to the top (at *eeee*) of it, till it becomes about two Inches and an half wide; and the sides of this spreading being but about half a quarter of an Inch thick makes the *Pan*. In the middle of the bottom of this *Pan* is a small Center hole Punch'd for the *Toe* of the *Spindle* to work in.

### 9. 19. *Of the Points and Point-Screws.*

The *Points* are made of Iron Plates about the thickness of a Queen *Elizabeth* Shilling: It is delineated at *e* in Plate 9. which is sufficient to shew the shape of it, at the end of this Plate, as at *a*, stands upright the *Point*. This *Point* is made of a piece of small Wyer about a quarter and half quarter of an Inch high, and hath its lower end Filed away to a small Shank about twice the length of the thickness of the Plate; so that a Sholder may remain. This small Shank is fitted into a small Hole made near the end of the Plate, and Revetted on the other side, as was taught

taught *Numb.* 2. *Fol.* 24. At the other end of the Plate is filed a long square notch in the Plate as at *b c* quarter and half quarter Inch wide, to receive the square shank of the *Point-Screws*.

The *Point-Screw* marked *f* is made of Iron; It hath a thin Head about an Inch square, And a square Shank just under the Head, an Inch deep, and almost quarter and half quarter Inch square, that the square Notch in the hinder end of the Plate may slide on it from end to end of the Notch; Under this square Shank is a round Pin filed with a Male-Screw upon it, to which is fitted a *Nut* with a Female-Screw in it, and Ears on its out-side to twist about, and draw the Head of the Shank close down to the *Tympan*, and so hold the *Point-Plate* fast in its Place.

¶ 20. Of the Hammer, described at *h*, and Sheeps-Foot described at *i* in Plate 9.

The *Hammer* is a common *Hammer* about a quarter of a Pound weight; It hath no *Claws* but a *Pen*, which stands the *Prefs-man* instead when the *Chase* proves so big, that he is forced to use small *Quoins*.

The Figure of the *Sheeps-Foot* is description sufficient. Its use is to nail and un-nail the *Balls*.

The *Sheeps-Foot* is all made of Iron, with an Hammer-head at one end, to drive the *Ball-Nails* into the *Ball-Stocks*, and a Claw at the other end, to draw the *Ball-Nails* out of the *Ball-Stocks*.

- ¶ 21. *Of the Foot-step, Girts, Stay of the Carriage, Stay of the Frisket, Ball-Stocks, Paper-Bench, Lye-Trough, Lye-Brush, Lye-Kettle, Tray to wet Paper in, Weights to Press Paper, Pelts, or Leather, Wool or Hair, Ball-Nails or Pumping-Nails.*

The *Foot Step* is an Inch-Board about a Foot broad, and sixteen Inches long. This Board is nailed upon a piece of Timber about seven or eight Inches high, and is Bevil'd away on its upper-side, as is also the Board on its under-side at its hither end, that the Board may stand aslope upon the Floor. It is placed fast on the Floor under the Carriage of the Press. Its Office shall be shewed when we come to treat of Exercise of the *Press-man*.

*Girts* are Thongs of Leather, cut out of the Back of an Horse-hide, or a Bulls hide, sometimes an Hogs-hide. They are about an Inch and an half, or an Inch and three quarters broad. Two of them are used to carry the *Carriage* out and in. These two have each of them one of their ends nailed to the *Barrel* on the *Spindle* of the *Rounce*, and the other ends nailed to the *Barrel* behind the *Carriage* in the *Planck* of the *Coffin*, and to the *Barrel* on the fore end of the *Frame* of the *Coffin*.

The *Stay* of the *Carriage* is sometimes a piece of the same *Girt* fastned to the outside of the further *Cheek*,  
and



and to the further hinder side of the Frame of the *Carriage*. It is fastned at such a length by the *Press man*, that the *Carriage* may ride so far out, as that the Irons of the *Tympan* may just rise free and clear off the fore-side of the *Plattin*.

Another way to stay the *Carriage* is to let an Iron Pin into the upper-side of the further Rail of the Frame of the *Ribs*, just in the place where the further hinder Rail of the *Carriage* stands projecting over the *Rib-Rail*, when the Iron of the *Tympan* may just rise free from the Fore-side of the *Plattin*; for then that projecting will stop against the Iron Pin.

The *Stay* of the *Frisket* is made by fastning a Batten upon the middle of the Top-side of the *Cap*, and by fastning a Batten to the former Batten perpendicularly downwards, just at such a distance, that the upper-side of the *Frisket* may stop against it when it is turned up just a little beyond a Perpendicular. When a *Press* stands at a convenient distance from a Wall, that Wall performs the office of the aforesaid *Stay*.

*Ball-Stocks* are Turn'd of *Alder* or *Maple*. Their Shape is delineated in Plate 9. at g: They are about seven Inches in Diameter, and have their under side Turned hollow, to contain the greater quantity of *Wool* or *Hair*; to keep the *Ball-Leathers* plump the longer.

The *Lye-Trough* (delineated in Plate 9. at k) is a Square Trough made of Inch-Boards; about four Inches deep, two Foot four Inches long, and one Foot nine Inches broad, and flat in the Bottom. Its inside is Leaded with Sheet-Lead, which reaches up over the upper Edges of the *Trough*. In the middle of the two ends (for so I call the shortest sides) on the outer sides as a a, is fastned a round Iron Pin, which

M

moves

moves in a round hole made in an Iron Stud with a square Sprig under it, to be drove and fastned into a *Wooden Horse*, which *Horse* I need not describe, because in Plate aforesaid I have given you the Figure of it.

The *Paper-Bench* is only a common Bench about three Foot eight Inches long, one Foot eight Inches broad, and three Foot four Inches high.

The *Lye-Brush* is made of *Hogs-Bristles* fastned into a Board with Brass-Wyer, for durance sake: Its Board is commonly about nine Inches long, and four and an half Inches broad; and the length of the Bristles about three Inches.

To perform the Office of a *Lye-Kettle* ( which commonly holds about three Gallons ) the old-fashioned *Chafers* are most commodious, as well because they are more handy and manageable than *Kettles* with Bails, as also because they keep *Lye* longer hot.

The *Tray to Wet Paper* in is only a common Butchers Tray, large enough to *Wet* the largest *Paper* in.

The *Weight to Press Paper* with, is either Mettal, or Stone, flat on the Bottom, to ly steddy on the *Paper-Board*: It must be about 50 or 60 pound weight.

For *Pelts* or *Leather*, *Ball-Nails* or *Pumping-Nails*, *Wool* or *Hair*, *Vellom* or *Parchment* or *Forrel*, the *Press-man* generally eases the *Master-Printer* of the trouble of choosing, though not the charge of paying for them: And for *Paste*, *Sallad Oyl*, and such accidental Requisites as the *Press-man* in his work may want, the *Devil* commonly fetches for him.

¶ 22. Of Racks to Hang Paper on, and of the Peel.

Our *Master-Printer* must provide *Racks* to hang *Paper* on to *Dry*. They are made of Deal-board Battens, square,

square, an Inch thick, and an Inch and an half deep, and the length the whole length of the Deal, which is commonly about ten or eleven Foot long, or else so long as the convenience of the Room will allow : The two upper corners of these *Rails* are rounded off that they may not mark the *Paper*.

These *Racks* are Hung over Head, either in the *Printing-House*, or *Ware-house*, or both, or any other Room that is most convenient to *Dry Paper* in ; they are hung a-thwart two *Rails* an Inch thick, and about three or four Inches deep, which *Rails* are fastned to some Joysts or other Timber in the Ceiling by Stiles perpendicular to the Ceiling ; These *Rails* stand so wide assunder, that each end of the *Racks* may hang beyond them about the distance of two Foot, and have on their upper edge at ten Inches distance from one another, so many square Notches cut into them as the whole length of the *Rail* will bear ; Into these square notches the *Racks* are laid parallel to each other with the flat side downwards, and the Rounded off side upwards.

The *Peel* is described in Plate 9. at 1, which Figure sufficiently shews what it is ; And therefore I shall need say no more to it, only its Handle may be longer or shorter according as the height of the Room it is to be used in may require.

#### ¶ 23. Of Inck.

The providing of good *Inck*, or rather good *Varnish* for *Inck*, is none of the least incumbent cares upon our *Master-Printer*, though Custom has almost made it so here in *England* ; for the process of making *Inck* being as well laborious to the Body, as noy-

lom and ungrateful to the Sence, and by several odd accidents dangerous of Firing the Place it is made in, Our *English Master Printers* do generally discharge themselves of that trouble ; and instead of having good *Inck*, content themselves that they pay an *Inck-maker* for good *Inck*, which may yet be better or worse according to the Conscience of the *Inck-maker*.

That our Neighbours the *Hollanders* who exhibit Patterns of good *Printing* to all the World, are careful and industrious in all the circumstances of good *Printing*, is very notorious to all Book-men ; yet should they content themselves with such *Inck* as we do, their Work would appear notwithstanding the other circumstances they observe, far less graceful than it does, as well as ours would appear more beautiful if we used such *Inck* as they do: for there is many Reasons, considering how the *Inck* is made with us and with them, why their *Inck* must needs be better than ours. As *First*, They make theirs all of good old *Linseed-Oyl* alone, and perhaps a little *Rosin* in it sometimes, when as our *Inck-makers* to save charges mingle many times *Trane-Oyl* among theirs, and a great deal of *Rosin*; which *Trane-Oyl* by its grossness, Furs and Choaks up a *Form*, and by its fatness hinders the *Inck* from drying ; so that when the Work comes to the *Binders*, it *Sets off* ; and besides is dull, smeary and unpleasant to the Eye. And the *Rosin* if too great a quantity be put in, and the *Form* be not very *Lean Beaten*, makes the *Inck* turn yellow: And the same does New *Linseed-Oyl*.

*Secondly*, They seldom *Boyl* or *Burn* it to that consistence the *Hollanders* do, because they not only save labour and Fewel, but have a greater weight of *Inck* out

out of the same quantity of Oyl when less *Burnt* away than when more *Burnt* away; which want of Burning makes the *Inck* also, though made of good old *Linseed* Oyl, Fat and Smeary, and hinders its *Drying*; so that when it comes to the *Binders* it also *Sets off*.

*Thirdly*, They do not use that way of clearing their *Inck* the *Hollanders* do, or indeed any other way than meer Burning it, whereby the *Inck* remains more Oily and *Grease* than if it were well clarified.

*Fourthly*, They to save the *Press-man* the labour of *Rubbing* the *Blacking* into *Varnish* on the *Inck-Block*, *Boyl* the *Blacking* in the *Varnish*, or at least put the *Blacking* in whilst the *Varnish* is yet *Boiling-hot*, which so *Burns* and *Rubifies* the *Blacking*, that it loses much much of its brisk and vivid black complexion.

*Fifthly*, Because *Blacking* is dear, and adds little to the weight of *Inck*, they stint themselves to a quantity which they exceed not; so that sometimes the *Inck* proves so unsufferable *Pale*, that the *Press-man* is forc'd to *Rub* in more *Blacking* upon the *Block*; yet this he is often so loth to do, that he will rather hazard the content the Colour shall give, than take the pains to amend it: satisfying himself that he can lay the blame upon the *Inck-maker*.

Having thus hinted at the difference between the *Dutch* and *English Inck*, I shall now give you the Receipt and manner of making the *Dutch-Varnish*.

They provide a *Kettle* or a *Caldron*, but a *Caldron* is more proper, such an one as is described in Plate 9. at m. This Vessel should hold twice so much Oyl as they intend to *Boyl*, that the *Scum* may be some considerable time a *Rising* from the top of the Oyl to the top of the Vessel to prevent danger. This Cal-



*dron* hath a Copper Cover to fit the Mouth of it, and this Cover hath an Handle at the top of it to take it off and put it on by. This *Caldron* is set upon a good strong Iron *Trevel*, and fill'd half full of old *Linseed-Oyl*, the older the better, and hath a good Fire made under it of solid matter, either *Sea-Coal*, *Charcoal* or pretty big Chumps of Wood that will burn well without much Flame; for should the Flame rise too high, and the *Oyl* be very hot at the taking off the Cover of the *Caldron*, the fume of the *Oyl* might be apt to take Fire at the Flame, and endanger the loss of the *Oyl* and Firing the House: Thus they let *Oyl* heat in the *Caldron* till they think it is Boyling-hot; which to know, they peel the outer Films of an *Oynion* off it, and prick the *Oynion* fast upon the end of a small long Stick, and so put it into the heating *Oyl*: If it be Boyling-hot, or almost Boyling-hot, the *Oynion* will put the *Oyl* into a Fermentation, so that a Scum will gather on the top of the *Oyl*, and rise by degrees, and that more or less according as it is more or less Hot: But if it be so very Hot that the Scum rises apace, they quickly take the *Oynion* out, and by degrees the Scum will fall. But if the *Oyl* be Hot enough, and they intend to put any *Rosin* in, the quantity is to every Gallon of *Oyl* half a Pound, or rarely a whole Pound. The *Rosin* they beat small in a *Mortar*, and with an Iron Ladle, or else by an Handful at a time strew it in gently into the *Oyl* lest it make the Scum rise too fast; but every Ladle-full or Handful they put in so leasurely after one another, that the first must be wholly dissolv'd before they put any more in; for else the Scum will Rise too fast, as aforesaid: So that  
you

you may perceive a great care is to keep the Scum down: For if it Boyl over into the Fire never so little, the whole Body of Oyl will take Fire immediately.

If the Oyl be Hot enough to *Burn*, they *Burn* it, and that so often till it be *Hard* enough, which sometimes is six, seven, eight times, or more.

To *Burn* it they take a long small Stick, or double up half a Sheet of Paper, and light one end to set Fire to the Oyl; It will presently Take if the Oyl be Hot enough, if not, they Boyl it longer, till it be.

To try if it be *Hard* enough, they put the end of a Stick into the Oyl, which will lick up about three or four drops, which they put upon an Oyster-shell, or some such thing, and set it by to cool, and when it is cold they touch it with their Fore or Middle-Finger and Thumb, and try its consistence by sticking together of their Finger and Thumb; for if it draw stiff like strong *Turpentine* it is *Hard* enough, if not, they Boyl it longer, or *Burn* it again till it be so consolidated.

When it is well Boyled they throw in an Ounce of Letharge of Silver to every four Gallons of Oyl to Clarify it, and Boyl it gently once again, and then take it off the Fire to stand and cool, and when it is cool enough to put their Hand in, they Strain it through a Linnen Cloath, and with their Hands wring all the *Varnish* out into a Leaded Stone-Pot or Pan, and keeping it covered, set it by for their use; The longer it stands by the better, because it is less subject to turn Yellow on the Paper that is Printed with it.

This is the *Dutch* way of making *Varnish*, and the way the English *Inck makers* ought to use.

*Note, First*, That the *Varnish* may be made without *Burning* the Oyl, viz. only with well and long Boyl.

Boyling it; for *Burning* is but a violent way of *Boyling*, to consolidate it the sooner.

*Secondly*, That an *Apple* or a *Crust* of *Bread*, &c. stuck upon the end of a *Stick* instead of an *Oynion* will also make the *Scum* of the *Oyl* rise: For it is only the *Air* contained in the *Pores* of the *Apple*, *Crust* or *Oynion*, &c. pressed or forced out by the violent heat of the *Oyl*, that raises the many *Bubbles* on the top of the *Oyl*: And the connection of those *Bubbles* are vulgarly called *Scum*.

*Thirdly*, The English *Inck-makers* that often make *Inck*, and that in great quantities, because one Man may serve all *England*, instead of setting a *Caldron* on a *Trevel*, build a *Furnace* under a great *Caldron*, and Trim it about so with *Brick*, that it Boils far sooner and more securely than on a *Trevel*; because if the *Oyl* should chance to Boil over, yet can it not run into the *Fire*, being Fenced round about with *Brick* as aforesaid, and the *Stoking-hole* lying far under the *Caldron*.

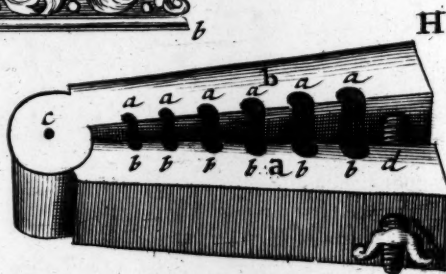
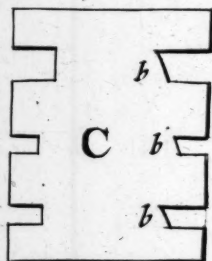
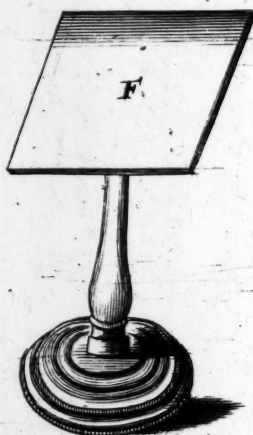
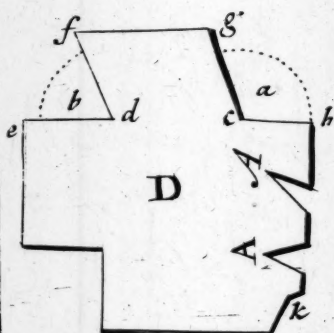
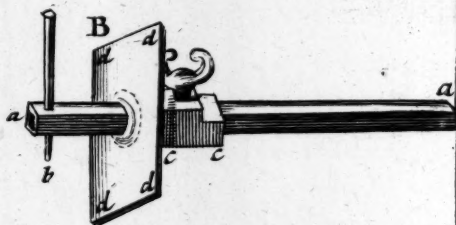
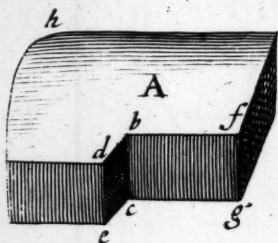
*Fourthly*, When for want of a *Caldron* the *Master-Printer* makes *Varnish* in a *Kettle*, He provides a great piece of thick *Canvass*, big enough when three or four double to cover the *Kettle*, and also to hang half round the sides of the *Kettle*: This *Canvass* (to make it more soluble) is wet in *Water*, and the *Water* well wrung out again; so that the *Canvass* remains only moist: Its use is to throw flat over the Mouth of the *Kettle* when the *Oyl* is *Burning*, to keep the *smoak* in, that it may stifle the *Flame* when they see cause to put it out. But the *Water* as was said before, must be very well wrung out of the *Canvass*, for should but a drop or two fall from the sides of it into the *Oyl* when it is *Burning*, it will so enrage the *Oyl*, and raise the *Scum*, that it might endanger the working over the top of the *Kettle*.

Having shewn you the *Master-Printers* Office, I account it suitable to proper Method, to let you know, how the *Letter-Founder* Cuts the *Punches*, how the *Molds* are made, the *Matrices* Sunck, and the *Letter Cast* and *Drest*, for all these Operations precede the *Compositers* Trade, as the *Compositers* does the *Pressmans*; wherefore the next Exercises shall be (God willing) upon Cutting of the *Steel-Punches*

ME-



Plate 10.





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**MECHANICK EXERCISES:**

Or, the Doctrine of

**Handy-works.**

Applied to the Art of

**Letter-Cutting.****The Second VOLUME.**

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**P R E F A C E.**

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**L**etter-Cutting is a Handy-Work hitherto kept so conceal'd among the Artificers of it, that I cannot learn any one hath taught it any other; But every one that has used it, Learnt it of his own Genuine Inclination. Therefore, though I cannot (as in other Trades) describe the general Practice of Work-men, yet the Rules I follow I shall shew here, and have as good an Opinion of these Rules, as those have that are shyest of discovering theirs. For, indeed, by the appearance of some Work done, a judicious Eye may doubt whether they go by any Rule at all, though Geometrick Rules, in no Practice whatever, ought to be more nicely or exactly observed than in this.

§. 12. ¶. 1. *Of Letter-Cutters Tools.*

**T**He making of *Steel Punches* is a Branch of the *Smith's Trade*: For, as I told you in the Preface to *Numb. 1.* The *Black-Smith's Trade* comprehends all Trades that use either Forge or File, from the *Anchor-Smith*, to the *Watch-maker*: They all working by the same Rules, though not with equal exactness; and all using the same Tools, though of different Sizes from those the Common *Black-Smith* uses; and that according to the various purposes they are applied, &c. Therefore, indeed, a *Letter-Cutter* should have a Forge set up, as by *Numb. 1.* But some *Letter-Cutters* may seem to scorn to use a Forge, as accounting it too hard Labour, and Ungentle for themselves to officiate at. Yet they all well know, that though they may have a common *Black-Smith* perform their much and heavy Work, that many times a Forge of their own at Hand would be very commodious for them in several accidental little and light Jobs, which (in a Train of Work) they must meet withal.

But if our *Letter-Cutter* will have no Forge, yet he must of necessity accommodate himself with a *Vice*, *Hand-Vice*, *Hammers*, *Files*, *Small* and *Fine Files* (commonly called *Watch-makers Files*) of these he saves all, as they wear out, to smooth and burnish the Sides and Face of his Letter with, as shall be shewed; *Gravers*, and *Sculpters* of all sorts, an *Anvil*, or a *Stake*, an *Oyl-stone*, &c. And of these, such as are suitable and fizable to the several Letters  
he

he is to Cut. These, or many of these Tools, being described in *Numb. 1.* I refer my Reader thither, and proceed to give an account of some Tools peculiar to the *Letter-Cutter*, though not of particular use to the Common *Black-Smith*.

¶ 2. *Of the Using-File.*

This *File* is about nine or ten Inches long, and three or four Inches broad, and three quarters of an Inch thick : The two broad sides must be exactly flat and straight : And the one side is commonly cut with a *Bastard-Cut*, the other with a *Fine* or *Smooth Cut*. (See *Numb. 1. Fol. 14, 15.*) Its use is to *Rub* a piece of Steel, Iron, or Brass, &c. flat and straight upon, as shall be shewed hereafter.

In chusing it, you must see it be exactly Flat and Straight all its Length and Breadth : For if it in any part Belly out, or be Hollow inwards, what is Rubbed upon it will be Hollow, Rubbing on the Bellying part ; and Bellying, Rubbing on the Hollow part. You must also see that it be very Hard ; and therefore the thickest *Using-Files* are likeliest to prove best, because the thin commonly Warp in Hardning.

¶ 3. *Of the Flat-Gage.*

The *Flat-Gage* is described in *Plate 10. at A.* It is made of a flat piece of Box, or other Hard Wood. Its Length is three Inches and an half, its Breadth two Inches and an half, and its Thickness one Inch and

an half. This is on the Flat, first made Square, but afterwards hath one of its Corners (as *b*) a little rounded off, that it may the easier comply with the Ball of the Hand. Out of one of its longest Sides, *viz.* that not rounded off, is Cut through the thickness of it an exact Square, whose one side *b f*, *c g* is about an Inch and three quarters long; and its other side *b d*, *c e* about half an Inch long. The Depth of these Sides and their Angle is exactly Square to the top and bottom of the upper and under Surfaces of the *Flat-Gage*.

Its Use is to hold a Rod of Steel, or Body of a *Mold*, &c. exactly perpendicular to the Flat of the *Using-File*, that the end of it may rub upon the *Using-File*, and be Filed away exactly Square, and that to the Shank; as shall more at large be shewed in §. 2. ¶. 3.

#### ¶. 4. *Of the Sliding Gage.*

The *Sliding Gage* is described in Plate 10. at Fig. B. It is a Tool commonly used by *Mathematical Instrument-Makers*, and I have found it of great use in *Letter-Cutting*, and making of *Molds*, &c. *aa* the Beam, *b* the Tooth, *c c* the Sliding Socket, *d d d d* the Shoulder of the Socket.

Its Use is to measure and set off Distances between the Sholder and the Tooth, and to mark it off from the end, or else from the edge of your Work.

I always use two or three of these *Gages*, that I need not remove the Sholder when it is set to a Distance which I may have after-use for; as shall in Working be shewed more fully.

## ¶ 5. Of the Face-Gages, marked C in Plate 10.

The *Face-Gage* is a Square Notch cut with a File into the edge of a thin Plate of Steel, Iron, or Brass, the thickness of a piece of common Latton, and the Notch about an *English* deep. There be three of these Gages made, for the Letters to be cut on one Body; but they may be all made upon one thin Plate, the readier to be found, as at D. As first, for the Long Letters; Secondly, for the Ascending Letters; And Thirdly, for the Short Letters. The Length of these several Notches, or Gages, have their Proportions to the Body they are cut to, and are as follows. We shall imagine (for in Practice it cannot well be perform'd, unless in very large Bodies) that the Length of the whole Body is divided into forty and two equal Parts.

The *Gage* for the Long Letters are the length of the whole Body, *viz.* forty and two equal Parts. The *Gage* for the Ascending Letters, *Roman* and *Italica*, are five Seventh Parts of the Body, *viz.* thirty Parts of Forty two, and thirty and three Parts for *English* Face. The *Gage* for the Short Letters are three Seventh Parts of the whole Body, *viz.* eighteen Parts of Forty two for the *Roman* and *Italica*, and twenty two Parts for the *English* Face.

It may indeed be thought impossible to divide a Body into seven equal Parts, and much more difficult to divide each of those seven equal Parts into six equal Parts, which are Forty two, as aforesaid, especially if the Body be but small; but yet it is



possible with curious Working: For seven thin Spaces may be Cast and Rubb'd to do it. And for dividing each of the thin Spaces into six equal Parts, you may Cast and Rub Full Point . to be of the thickness of one thin Space, and one sixth part of a thin Space: And you may Cast and Rub : to be the thickness of one thin Space, and two sixth parts of a thin Space: And you may Cast and Rub , to be the thickness of one thin Space, and three sixth parts of a thin Space: And you may Cast and Rub - to be the thickness of one thin Space, and four sixth parts of a thin Space: And you may Cast and Rub ; to be the thickness of one thin Space, and five sixth parts of a thin Space.

The reason why I propose . to be Cast and Rubb'd one sixth part thicker than a thin Space, is only that it may be readily distinguished from : , - ; which are two sixth parts, three sixth parts, four sixth parts, five sixth parts thicker than a thin Space. And for six sixth parts thicker than a thin Space, two thin Spaces does it.

The manner of adjusting these several Sixth Parts of Thicknesses is as follows. You may try if six . exactly agree, and be even with seven thin Spaces; (or, which is all one, a Body) for then is each of those six . one sixth part thicker than a thin Space, because it drives out a thin Space in six thin Spaces. And you may try if six : be equal to a Body and one thin Space; for then is each : two sixth parts thicker than a thin Space. If six , be equal to nine thin Spaces, then each , is three sixth parts of a thin Space thicker than a thin Space. If six -

be

be equal to ten thin Spaces, then each - is four sixth parts of a thin Space thicker than a thin Space. If six ; be equal to eleven thin Spaces, then each ; is five sixth parts of a thin Space thicker than a thin Space.

Now, as aforefaid, a thin Space being one seventh part of the Body, and the thin Space thus divided, you have the whole Body actually divided into forty and two equal parts, as I have divided them in my Drafts of Letters down the Sides, and in the Bottom Line.

Though I have thus shewed how to divide a thin Space into six equal Parts, yet when the Letter to be Cut proves of a small Body, the thin Space divided into two equal Parts may serve: If it prove bigger, into three or four equal Parts: And of the the largest Bodies, they may be divided into six, as aforefaid.

If now you would make a *Gage* for any number of thin Spaces and Sixth Parts of a thin Space, you must take one thin Space less than the number of thin Spaces proposed, and add . : , - ; according as the number of sixth Parts of a thin Space require ; and to those complicated Thicknesses you may file a square Notch on the edge of the thin Plate aforefaid, which shall be a standing Gage or Measure for that number of thin Spaces and sixth Parts of a thin Space.

All the Exception against this way of Measuring is, that thin Spaces cast in Metal may be subject to bow, and so their Thicknesses may prove deceitful. But, in Answer to that, I say, you may, if you will,  
Cast

Cast I for two thin Spaces thick, e for three thin Spaces thick, S for four thin Spaces thick, L for five thin Spaces thick, D for six thin Spaces thick, or any other Letters near these several Thicknesses, as you think fit; only remember, or rather, make a Table of the number of thin Spaces that each Letter on the Shank is Cast for. And by complicating the Letters and Points, as aforesaid, you will have any Thickness, either to make a Gage by, or to use otherwise.

On the other Edge of the *Face-Gage* you may file three other Notches, of the same Width with those on the former Edge, for the Long, the Ascending, and Short Letters. But though the two sides of each of these Notches are parallel to each other, yet is not the third side square to them, but hath the same Slope the *Italick* hath from the *Roman*; as you may see in the Figure at *b b b*.

#### ¶ 6. Of Italick, and other Standing Gages.

These *Gages* are to measure (as aforesaid) the Slope of the *Italick* Stems, by applying the Top and Bottom of the *Gage* to the Top and Bottom Lines of the Letters, and the other Side of the *Gage* to the Stem: for when the Letter complies with these three sides of the *Gage* that Letter hath its true Slope.

The manner of making these *Gages* (and indeed all other *Angular Gages*) is thus.

Place one Point of a Pair of Steel *Dividers* upon the thin Plate aforesaid, at the Point *c* or *d* (in Fig.

*Fig. D* in *Plate 10.* and with the other Point describe a small fine Arch of a Circle; as, *e f* or *g h*. In this Arch of the Circle must be set off on the *Gage a* 110 Degrees, and on the *Gage b* 70 Degrees, and draw from the Centres *c* and *d* two straight Lines through those numbers of Degrees: Then Filing away the Plate between the two Lines, the *Gages* are finished.

To find the Measure of this, or any other number of Degrees, do thus; Describe a Circle on a piece of Plate-Brass of any Radius (but the larger the better) draw a straight Line exactly through the Centre of this Circle, and another straight Line to cut this straight Line at right Angles in the Centre, through the Circle; so shall the Circle be divided into four Quadrants: Then fix one Foot of your Compasses (being yet unstirr'd) in one of the Points where any of the straight Lines cuts the Circle, and extend the moving Foot of your Compasses where it will fall in the Circle, and make there a Mark, which is 60 Degrees from the fixed Foot of the Compasses: Then fix again one Foot of your Compasses in the Intersection of the straight Line and Circle that is next the Mark that was made before, and extend the moving Foot in the same Quadrant towards the straight Line where you first pitch'd the Foot of your Compasses, and with the moving Foot make another Mark in the Circle. These two Marks divide the Quadrant into three equal Parts: The same way you may divide the other three Quadrants; so shall the whole Circle be divided into twelve equal Parts; and each of these twelve equal parts contain

tain an Arch of thirty Degrees: Then with your Dividers divide each of these 30 Degrees into three equal Parts, and each of these three equal Parts into two equal Parts, and each of these two equal Parts into five equal Parts, so shall the Circle be divided into 360 equal Parts, for your use.

To use it, describe on the Centre of the Circle an Arch of almost a Semi-Circle: This Arch must be exactly of the same Radius with that I prescribed to be made on the *Gages a b*, from *e* to *f*, and from *g* to *h*; then count in your Circle of Degrees from any Diametral Line 110 Degrees; and laying a straight Ruler on the Centre, and on the 110 Degrees aforesaid, make a small Mark through the the small Arch; and placing one Foot of your Compasses at the Intersection of the small Arch, with the Diametral Line, open the other Foot to the Mark made on the small Arch for 110 Degrees, and transfer that Distance to the small Arch made on the *Gage*: Then through the Marks that the two Points of your Compasses make in the small Arch on the *Gage*, draw two straight Lines from the Centre *c*: and the Brass between those two straight Lines being filed away, that *Gage* is made. In like manner you may set off any other number of Degrees, for the making of any other *Gage*.

In like manner, you may measure any Angle in the Drafts of Letters, by describing a small Arch on the Angular Point, and an Arch of the same Radius on the Centre of your divided Circle: For then, placing one Foot of your Compasses at the Intersection of the small Arch with either of the straight  
Lines



Lines proceeding from the Angle in the Draft, and extending the other Foot to the Interfection of the small Arch, with the other straight Line that proceeds from the Angle, you have between the Feet of your Compasses, the Width of the Angle; and by placing one Foot of your Compasses at the Interfection of any of the straight Lines that proceed from the Centre of the divided Circle, and the small Arch you made on it, and making a Mark where the other Foot of your Compasses falls in the said small Arch, you may, by a straight Ruler laid on the Centre of the divided Circle, and the Mark on the small Arch, see in the Limb of the Circle the number of Degrees contained between the Diametral, or straight Line and the Mark.

If you have already a dividing-Plate of 360 Degrees, of a larger Radius than the Arch on your Gage, you may save your self the labour of dividing a Circle (as aforesaid,) and work by your dividing-Plate as you were directed to do with the Circle that I shewed you to divide.

In these Documents I have exposed my self to a double Censure; First, of *Geometricians*: Secondly, of *Letter-Cutters*. *Geometricians* will censure me for writing anew that which almost every young Beginner knows: And *Letter-Cutters* will censure me for proposing a Rule for that which they dare pretend they can do without Rule.

To the *Geometricians* I cross the Cudgels: yet I writ this not to them; and I doubt I have written superfluously to *Letter-Cutters*, because I think few of them either will or care to take pains to understand

these small Rudiments of *Geometry*. If they do, and be ingenious, they will thank me for discovering this Help in their own Way, which few of them know. For by this Rule they will not only make Letters truer, but also quicker, and with less care; because they shall never need to stamp their *Counter-Punch* in Lead, to see how it pleases them; which they do many times, before they like their *Counter-Punch*, be it of A A V v W w V W, and several other Letters) and at last finish their *Counter-Punch* but with a good Opinion they have that it may do well, though they frequently see it does not in many Angular Letters on different Bodies Cut by the same Hand. And were *Letter-Cutting* brought to so common Practice as *Joyner*y, *Cabinet-making*, or *Mathematical Instrument-making*, every young Beginner should then be taught by Rules, as they of these Trades are; because *Letter-Cutting* depends as much upon Rule and Compass as any other Trade does.

You may in other places, where you find most Convenience (as at *i*) make a Square, which may stand you in stead for the Squaring the Face and Stems of the *Punch* in *Roman* Letters, and also in many other Uses.

And you may make *Gages*, as you were taught before to try the *Counter-Punches* of Angular Letters; as, A K M N V X Y Z, *Romans* and *Italicks*, *Capitals* and *Lower-Case*. But then, that you may know each distinct *Gage*, you may engrave on the several respective *Gages*, at the Angle, A A 4 &c. For by examining by the Drafts of Letters, what Angle their Insides make, you may set that Angle off, and  
make

make the *Gage* as you were taught before, in the *Gage* for the Slope of *Italicks*.

¶ 7. Of the Liner.

The *Liner* is marked E in *Plate 10*. It is a thin Plate of Iron or Brass, whose Draft is sufficient to express the Shape. The Use of it is on the under-edge *a b* (which is about three Inches long) and is made truly straight, and pretty sharp or fine; that being applied to the Face of a *Punch*, or other piece of Work, it may shew whether it be straight or no.

¶ 8. Of the Flat-Table.

The *Flat-Table* at F in *Plate 10*. The Figure is there sufficient. All its Use is the Table F, for that is about one Inch and an half square, and on its Surfaces exactly straight and flat. It is made of Iron or Brass, but Brass most proper. Its Use is to try if the Shank of a *Punch* be exactly Perpendicular to its Face, when the Face is set upon the *Table*; for if the Shank stand then directly upright to the Face of the *Table*, and lean not to any side of it, it is concluded to be perpendicular.

It hath several other Uses, which, when we come to *Casting of Letters*, and *Justifying of Matrices*, shall be shewn.

## ¶ 9. Of the Tach.

The *Tach* is a piece of Hard-Wood, (Box is very good) about three Inches broad, six Inches long, and three quarters of an Inch thick. About half its Length is fastned firm down upon the *Work-Bench*, and its other half projects over the hither Edge of it. It hath three or four Angular Notches on its Fore-end to rest and hold the Shank of a *Punch* steady when the End of the *Punch* is screwed in the *Hand-Vice*, and the *Hand-Vice* held in the Left Hand, while the *Work-man* Files or Graves on it with his Right Hand.

Instead of Fastning the *Tach* to the *Bench*, I Saw a square piece out of the further half of the *Tach*, that it may not be too wide for the Chaps of the *Vice* to take and screw that narrow End into the Chaps of the *Vice*, because it should be less cumbersome to my *Work-Bench*.

## ¶ 10. Of Furnishing the Work-Bench.

The *Work-man* hath all his great *Files* placed in Leather Nooses, with their Handles upwards, that he may readily distinguish the *File* he wants from another *File*. These Nooses are nailed on a Board that Cases the Wall on his Right Hand, and as near his *Vice* as Convenience will admit, that he may the readier take any *File* he wants.

He hath also on his Right Hand a Tin Pot, of about a Pint, with small *Files* standing in it, with their  
their

their Handles downwards, that their Blades may be the readier seen. These small *Files* are called *Watch-makers Files*, and the *Letter-Cutter* hath occasion to use these of all Shapes, viz. *Flat, Pillar, Square, Triangular, Round, Half-Round, Knife-Files, &c.*

He also provides a shallow square Box, of about five Inches long, and three Inches broad, to lay his small Instruments in; as, his *Gages*, his *Liner*, some common *Punches, &c.* This Box he places before him, at the further side of the *Work-Bench*.

He also provides a good *Oyl-Stone*, to sharpen his *Gravers* and *Sculpters* on. This he places at some distance from the *Vice*, on his Left Hand.

§. 13. ¶. I. Of Letter-Cutting.

The *Letter-Cutter* does either Forge his *Steel-Punches*, or procures them to be forged; as I shewed, *Numb. 1. Fol. 8, 9, 10. in Vol. I. &c.* But great care must be taken, that the Steel be sound, and free from Veins of Iron, Cracks and Flaws, which may be discerned; as I shewed in *Numb. 3. Vol. I.* For if there be any Veins of Iron in the Steel, when the Letter is Cut and Temper'd, and you would Sink the *Punch* into the Copper, it will batter there: Or it will Crack or Break if there be Flaws.

If there be Iron in it, it must with the Chissel be split upon a good Blood-Red-Heat in that place, and the Iron taken or wrought out; and then with another, or more Welding Heat, or Heats, well doubled up, and laboured together, till the Steel become a sound entire piece. This Operation *Smiths* call *Well Currying of the Steel*. If



If there be Flaws in it, you must also take good Welding Heats, so hot, that the contiguous sides of the Flaws may almost Run : for then, snatching it quickly out of the Fire, you may labour it together till it become close and sound.

Mr. *Robinson*, a *Black-Smith* of *Oxford*, told me a way he uses that is ingenious, and seems rational : For if he doubts the Steel may have some small Flaws that he can scarce discern, he takes a good high Blood-Red Heat of it, and then twists the Rod or Bar (as I shewed, *Numb. 3. Vol. I.*) which Twisting winds the Flaws about the Body of the Rod, and being thus equally disposed, more or less, into the Out-sides of the Rod, according as the Position of the Flaw may be, allows an equal Heat on all sides to be taken, because the Out-sides heat faster than the In-side ; and therefore the Out-sides of the Steel are not thus so subject to Burn, or Run, as if it should be kept in the Fire till the Middle, or In-side of it should be ready to Run. And when the Steel is thus well welded, and soundly laboured and wrought together with proper Heats, he afterwards reduces it to Form.

Now, that I may be the better understood by my Reader as he reads further, I have, in *Plate 10.* at *Fig. G* described the several Parts of the *Punch* ; which I here explain.

G The Face.

*aa, bb* The Thickness.

*ab, ab* The Heighth.

*ac, bc, bc* The Length of the Shank, about an Inch and three quarters long.

*ccc* The Hammer-End.

This

This is no strict Length for the Shank, but a convenient Length; for should the Letter Cut on the Face be small, and consequently, the Shank so too, and the Shank much longer, and it (as seldom it is) not Temper'd in the middle, it might, with Punching into Copper, bow in the middle, either with the weight of the Hammer, or with light reiterated Blows: And should it be much shorter, there might perhaps Finger-room be wanting to manage and command it while it is Punching into the Copper. But this Length is long enough for the biggest Letters, and short enough for the smallest Letters.

The Heighth and Thickness cannot be assign'd in general, because of the diversity of Bodies, and Thickness of Letters: Besides, some Letters must be Cut on a broad Face of Steel, though, when it is Cut, it is of the same Body; as all Letters are, to which *Counter-Punches* are used; because the Striking the *Counter-Punch* into the Face of the *Punch* will, if it have not strength enough to contain it, break or crack one or more sides of the *Punch*, and so spoil it. • But if the Letter be wholly to be Cut, and not Counter-Punch'd, as I shall hereafter hint in general what Letters are not, then the Face of the *Punch* need be no bigger, or, at least, but a small matter bigger than the Letter that is to be cut upon it.

Now, If the Letter be to be Counter-punch'd, the Face of the *Punch* ought to be about twice the Heighth, and twice the Thickness of the Face of the *Counter-Punch*; that so, when the *Counter-Punch* is struck just on the middle of the Face of the *Punch*, a

convenient Substance, and consequently, Strength of Steel on all its Sides may be contained to resist the Delitation, that the Sholder or Beard of the *Counter-Punch* sinking into it, would else make.

If the *Letter-Cutter* be to Cut a whole Set of *Punches* of the same Body of *Roman* and *Italica*, he provides about 240 or 260 of these *Punches*, because so many will be used in the *Roman* and *Italica Capitals* and *Lower-Case*, *Double-Letters*, *Swash-Letters*, *Accented Letters*, *Figures*, *Points*, &c. But this number of *Punches* are to have several Heighths and Thicknesses, though the Letters to be Cut on them are all of the same Body.

What Height and Thickness is, I have shewed before in this §, but not what Body is; therefore I shall here explain it.

By Body is meant, in *Letter-Cutters*, *Founders* and *Printers* Language, the Side of the Space contained between the Top and Bottom Line of a Long Letter. As in the Draft of Letters, the divided Line on the Left Hand of A is divided into forty and two equal Parts; and that Length is the Body, thus: J being an Ascending and Descending Letter, viz. a long Letter, stands upon forty two Parts, and therefore fills the whole Body.

There is in common Use here in *England*, about eleven Bodies, as I shewed in §.2.¶.2. of this Volumn.

I told you even now, that all the *Punches* for the same Body must not have the same Height and Thickness: For some are Long; as, J j Q, and several others; as you may see in the Drafts of Letters: and these long Letters stand upon the whole Height of the Body.

The

The Ascending and Descending Letters reach from the Foot-Line, up to the Top-Line ; as all the Capital Letters are Ascending Letters, and so are many of the Lower-Case Letters ; as, b d f, and several others. The Descending Letters are of the same Length with the Ascending Letters ; as, g p q and several others. These are contained between the Head-Line and the Bottom-Line. The Short Letters are contained between the Head-Line and the Bottom-line. These are three different Sizes of Heighth the *Punches* are made to, for Letters of the same Body. But in proper place I shall handle this Subject more large and distinctly.

And as there is three Heighths or Sizes to be considered in Letters Cut to the same Body, so is there three Sizes to be considered, with respect to the Thicknesses of all these Letters, when the *Punches* are to be Forged : For some are m thick ; by m thick is meant m *Quadrat* thick, which is just so thick as the Body is high : Some are n thick ; that is to say, n *Quadrat* thick, viz. half so thick as the Body is high : And some are *Space* thick ; that is, one quarter so thick as the Body is high ; though Spaces are seldom Cast so thick, as shall be shewed when we come to *Casting* : and therefore, for distinction sake, we shall call these Spaces, Thick Spaces.

The first three Sizes fit exactly in Heighth to all the Letters of the same Body ; but the last three Sizes fit not exactly in Thickness to the Letters of the same Body ; for that some few among the Capitals are more than m thick, some less than m thick, and more than n thick ; and some less than n thick, and

more than Space thick; yet for Forging the *Punches*, these three Sizes are only in general Considered; with Exception had to *Æ* *Æ* *2*, and most of the Swash Letters; which being too thick to stand on an m, must be Forged thicker, according to the Work-man's Reason.

After the Work-man has accounted the exact number of Letters he is to Cut for one Set, he considers what number he shall use of each of these several Sizes in the *Roman*, and of each of these several Sizes in the *Italick*; (for the *Punches* of *Romans* and *Italicks*, if the Body is large, are not to be Forged to the same shape, as shall be shewed by and by) and makes of a piece of Wood one Pattern of the several Sizes that he must have each number Forged to. Upon every one of these Wooden Patterns I use to write with a Pen and Ink the number of *Punches* to be Forged of that Size, lest afterwards I might be troubled with Recollections.

I say (for Example) He considers how many long Letters are m thick, how many long Letters are n thick, and how many long Letters are Space thick, in the *Roman*; and also considers which of these must be Counter-punch'd, and which not: For (as was said before) those Letters that are to be Counter-punch'd are to have about twice the Heighth and twice the Thickness of the Face of the *Counter-Punch*, for the Reason aforesaid. But the Letters not to be Counter-punch'd need no more Substance but what will just contain the Face of the Letter; and makes of these three Sizes three Wooden Patterns, of the exact Length, Heighth and Thickness that the Steel *Punches* are to be Forged to. He



He also counts how many are Ascendents and Descendents, m-thick, n-thick, and Space thick ; still considering how many of them are to be Counter-punch'd, and how many not ; and makes Wooden Patterns for them.

The like he does for short Letters ; and makes Wooden Patterns for them, for Steel *Punches* to be Forged by.

And as he has made his Patterns for the *Roman*, so he makes Patterns for the *Italick* Letters also ; for the same shap'd *Punches* will not serve for *Italick*, unless he should create a great deal more Work to himself than he need do : For *Italick Punches* are not all to be Forged with their sides square to one another, as the *Romans* are ; but only the highest and lowest sides must stand in Line with the highest and lowest sides of the *Roman* ; but the Right and Left Hand sides stand not parallel to the Stems of the *Roman*, but must make an Angle of 20 Degrees with the *Roman* Stems : so that the Figure of the Face of the *Punch* will become a *Rhomboides*, as it is called by *Geometricians*, and the Figure of this Face is the Slope that the *Italick* Letters have from the *Roman*, as in proper place shall be further shewed. Now, should the *Punches* for these Letters be Forged with each side square to one another, the *Letter-Cutter* would be forced to spend a great deal of Time, and take great pains to File away the superfluous Steel about the Face of the Letter when he comes to the Finishing of it, especially in great Bodied Letters. Yet are not all the *Italick* Letters to be Forged on the Slope ; for the *Punches* of some of them, as the

*m n*, and many others, may have all, or, at least, three of their sides, square to one another, though their Stems have the common Slope, because the ends of their Beaks and Tails lie in the same, perpendicular with the Outer Points of the Bottom and Top of their Stems, as is shewed in the Drafts of Letters.

Though I have treated thus much on the Forging of Punches, yet must all what I have said be understood only for great Bodied *Punches*; viz. from the *Great Primer*, and upwards. But for smaller Bodies; as *English*, and downwards, the *Letter-Cutter* generally, both for *Romans* and *Italicks*, gets so many square Rods of Steel, Forged out of about two or three Foot in Length, as may serve his purpose; which Rods he elects as near his Body and Sizes as his Judgment will serve him to do; and with the edge of a Half-round File, or a Cold-Chissel, cuts them into so many Lengths as he wants *Punches*. Nay, many of these Rods may serve for some of the small Letters in some of the greater Bodies; and also, for many of their *Counter-Punches*.

Having thus prepared your *Punches*, you must Neal them, as I shewed in *Numb. 3. Vol. I.*

## ¶ 2. Of Counter-Punches.

The *Counter-Punches* for great Letters are to be Forged as the *Letter-Punches*; but for the smaller Letters, they may be cut out of Rods of Steel, as aforesaid. They must also be well Neal'd, as the *Punches*. Then must one of the ends be Filed away on

on the out-side the Shank, to the exact shape of the in-side of the Letter you intend to Cut. For Example, If it be *A* you would Cut ; This *Counter-Punch* is easie to make, because it is a Triangle ; and by measuring the In-side of the Angle of *A* in the Draft of Letters, as you were taught, §. 12. ¶. 6. you may make on your Standing *Gage-Plate* a *Gage* for that Angle : So that, let the Letter to be Cut be of what Body you will, from the least, to the biggest Body, you have a Standing *Gage* for this *Counter-Punch*, so oft as you may have occasion to Cut *A*.

The *Counter-Punch* of *A* ought to be Forged Triangularly, especially towards the Punching End, and Tryed by the *A Gage*, as you were taught to use the Square, Numb. 3. Vol. I. Yet, for this and other Triangular *Punches*, I commonly reserve my worn out three square Files, and make my *Counter-Punch* of a piece of one of them that best fits the Body I am to Cut.

Having by your *A-Gage* fitted the Top-Angle and the Sides of this *Counter-Punch*, you must adjust its Heighth by one of the three *Face-Gages* mentioned in § 12. ¶. 5. viz. by the Ascending *Face-Gage* ; for *A* is an Ascending Letter. By Adjusting, I do not mean, you must make the *Counter-Punch* so high, as the Depth of the Ascending *Face-Gage* ; because in this Letter here is to be considered the Top and the Footing, which strictly, as by the large Draft of *A*, make both together five sixth Parts of a thin Space : Therefore five sixth Parts must be abated in the Heighth of your *Counter-Punch*, and it must be but four thin Spaces, and one sixth part of a thin Space

Space high, because the Top above the *Counter-Punch*, and the Footing below, makes five sixth Parts of a thin Space, as aforesaid.

Therefore, to measure off the Width of four thin Spaces and one sixth Part of a thin Space, lay three thin Spaces, or, which is better, the Letter e, which is three thin Spaces, as aforesaid; and . which is one thin Space and one sixth part of a thin Space, upon one another; for they make together, four thin Spaces, and one sixth part of a thin Space; and the thickness of these two Measures shall be the Height of the *Counter-Punch*, between the Footing and the Inner Angle of *A*. And thus, by this Example, you may couple with proper Measures either the whole Forty two, which is the whole Body, or any number of its Parts, as I told you before.

This Measure of four thin Spaces and one sixth part of a thin Space is not a Measure, perhaps, used more in the whole Set of Letters to be Cut to the present Body, therefore you need not make a *Standing Gage* for it; yet a present *Gage* you must have: Therefore use the *Sliding Gage* (described in §. 12. ¶. 4. and Plate 10. at B.) and move the Socket *cc* on the Beam *a a*, till the Edge of the Shoulder of the Square of the Socket at the under-side of the Beam stands just the Width of four thin Spaces and one sixth part of a thin Space, from the Point of the Tooth *b*; which you may do by applying the Measure aforesaid just to the Square and Point of the Tooth; for then if you Screw down the Screw in the upper side of the Sliding Socket, it will fasten the Square at that distance from the Point of the Tooth.

Tooth. And by again applying the side of the Square to the Foot of the Face of the *Counter-Punch*, you may with the Tooth describe a small race, which will be the exact Heighth of the *Counter-Punch* for *A*. But *A* hath a Fine stroak within it, reaching from Side to Side, which by the large Draft of *A*, you may find that the middle of this cross stroak is two Thin Spaces above the bottom of this *Counter-Punch*; and with your common *Sliding-Gage* measure that distance as before, and set off that distance also on the Face of your *Counter-Punch*. Then with the edge of a Fine *Knife-File*, File straight down in that race, about the depth of a Thin Space, or somewhat more; So shall the *Counter-Punch* for *A* be finisht. But you may if you will, take off the Edges or Sholder round about the Face of the *Counter-Punch*, almost so deep as you intend to strike it into the *Punch*: for then the Face of the *Counter-Punch* being Filed more to a Point, will easier enter the *Punch* than the broad Flat-Face.

But note, That if it be a very Small Bodied *A* you would make, the Edge of a Thin *Knife-File* may make too wide a Groove: In this case you must take a peece of a well-Temper'd broken Knife, and strike its Edge into the Face of the *Counter-Punch*, as afore said.

### ¶ 3. Of Sinking the Counter-Punches.

Having thus finisht his *Counter-Punch*, he Hardens and Tempers it, as was taught Numb. 3. fol. 57, 58. Vol. I. And having also Filed the Face of his Punch

Q

he



he intends to cut his *A* upon, pretty Flat by guess, he Screws the Punch upright, and hard into the Vice: And setting the Face of his *Counter-Punch* as exactly as he can, on the middle of the Face of his Punch, he, with an Hammer suitable to the Size of his *Counter-Punch*, strikes upon the end of the *Counter-Punch* till he have driven the Face of it about two Thin Spaces deep into the Face of the Punch. So shall the *Counter-Punch* have done its Office.

But if the Letter to be *Counter-Puncht* be large, as *Great Primmer*, or upwards, I take a good high Blood red Heat of it, and Screw it quickly into the Vice; And having my *Counter-Punch* Hard, not Temper'd, because the Heat of the Punch softens it too fast: And also having before-hand the *Counter-Punch* Screwed into the *Hand-Vice* with its Shank along the Chaps, I place the Face of the *Counter-Punch* as before, on the middle of the Face of the Punch, and with an Hammer drive it in, as before.

Taking the Punch out of the Vice, he goes about to Flat and Smoothen the Face in earnest; for it had been to no purpose to Flat and Smoothen it exactly before, because the Sinking of the *Counter-Punch* into it, would have put it out of Flat again.

But before he Flats and Smoothen the Face of the Punch, He Files by guess the superfluous Steel away about the Face of the Letter, viz. so much, or near so much, as is not to be used when he comes to finish up the Letter, as in this present Letter *A*, which standing upon a Square Face on the Punch, meets in an Angle at the Top of the Letter. Therefore the Sides of that Square must be Filed away  
to

to an Angle at the Top of the Face of the Punch. But great care must be taken, that he Files not more away than he should: For he considers that the left hand Stroak of *A* is a Fat Stroak, and that both the left-hand and the right-hand Stroak too, have Footings, which he is careful to leave Steel enough in their proper places for.

The reason why these are now Fil'd thus away, and not after the Letter is finisht, is, Because in the Flatting the Face there is now a less Body of Steel to File away, than if the whole Face of the Punch had remain'd intire: For though the following ways are quick ways to Flatten the Face, yet considering how tenderly you go to Work, and with what Smooth Files this Work must be done, the riddance made will be far less when a broad Face of *Steel* is to be Flatned, than when only so much, or very little more than the Face of the *Letter* only is to be Flatned.

To Flat and Smoothen the Face of the Punch, he uses the *Flat-Gage*, (described §. 12. ¶. 3. and Plate 10. at A.) thus, He fits one convex corner of the Shank of the Punch, into the Concave corner of the *Flat-Gage*, and so applies his *Flat-Gage-Punch* and all to the Face of the *Using-File*, and lets the *Counter-Punch* end, viz. the Face of the Punch Sink down to the Face of the *Using-File*: And then keeping the convex Corner of the Shank of the Punch close and steddy against the Concave corner of the *Flat-Gage*, and pressing with one of his Fingers upon the then upper end of the Punch, viz. the Hammer-end, he also at the same time, presses

the lower end of the Punch, viz. The Face against the *Using-File*, and thrusts the *Flat-Gage* and *Punch* in it so oft forwards, till the extuberant Steel on the Face, be Rub'd or Fil'd away : which he knows partly by the alteration of colour and Fine Furrows made by the *Using-File* on the Face of the Punch, and partly by the falling away of the parts of the Face that are not yet toucht by the *Using-File* : So that it may be said to be truly Flat: which he knows, when the whole Face of the Punch touches upon the Flat of the *Using-File*, or at least, so much of the Face as is required in the Letter : For all Counter-Puncht-Letters, as aforesaid, must have a greater Face of Steel than what the bare Letter requires : for the reason aforesaid.

Another way I use is thus. After I have Fil'd the Face as true as I can by guess, with a *Rough-Cut-File*, I put the Punch into an Hand-Vice, whose Chaps are exactly Flat, and straight on the upper Face, and sink the Shank of the Punch so low down in the Chaps of the Hand-Vice, that the low side of the Face of the Punch may lye in the same Plain with the Chaps; which I try with the Liner. For the Liner will then shew if any of the Sides stand higher than the Plain of the Chaps: Then I Screw the Punch hard up, and File off the rising side of the Punch, which brings the Face to an exact Level: For the Face of the Chaps being Hard Steel, a File cannot touch them, but only take off the aforesaid Rising parts of the Face of the Punch, till the *Smooth-File* has wrought it all over exactly into the same Plain with the Face of the Chaps of the *Hand-Vice*.  
Some

Some *Letter-Cutters* work them Flat by Hand, which is not only difficult, but tedious, and at the best, but done by guess.

The inconvenience that this Tool is subject to, is, That with much using its Face will work out of Flat: Therefore it becomes the Workman to examine it often, and when he finds it faulty to mend it.

When they *File* it Flat by Hand, they Screw the Shank of the Punch perpendicularly upright into the Chaps of the Vice, and with a *Flat-Bastard-Cut-File*, of about Four Inches long, or if the Punch be large, the File larger, according to discretion, and File upon the Face, as was shewn *Numb. I. fol. 15, 16*. Then they take it out of the Vice again, and holding up the Face Horizontally, between the Sight and the Light, examine by nice observing whether none of its Angles or Sides are too high or too low: And then Screwing it in the Vice again, as before, with a *Smooth-Cut-File*, he at once both Files down the Higher Sides or Angles, and Smoothens the Face of the Punch. But yet is not this Face so perfectly Flatned, but that perhaps the middle of it rises more or less, above the Sides: And then he Screws it in his *Hand-Vice*, and leans the Shank of the Punch against the Tach, pretty near upright, and so as he may best command it, and with a *Watch-Makers Half-Round-Sharp-Cut-File*, Files upon it with the Flat-Side of his File; But so that he scarce makes his forward and backward Stroaks longer than the breadth of the Face of his Punch, lest in a long Stroak, the hither or farther end of his File should Mount or Dip, and there-

therefore keeps his File, with the Ball of his Finger upon it, close to the Face of the Punch. Then with the Liner he examines how Flat the Face of the Punch is, and if it be not yet Flat, as perhaps it will not be in several Trials, he again reiterates the last process with the *Small-Half-Round-File*, till it be Flat. But he often Files cross the Furrows of the File, as well because it makes more riddance, as because he may better discern how the File bears on the Face of the Punch.

When it is Flat, he takes a Small well-worn Half-Round-File, and working (as before) with the *Sharp-Cut-File*, he Smoothens the Face of the Punch.

Having thus Flatted the Face of the Punch, and brought the Letter to some appearance of Form, He Screws the Punch in the Hand-Vice, but not with the Shank perpendicular to the Chaps, but so as the Side he intends to File upon may stand upwards and aslope too, and make an Angle with the Chaps of the Hand-Vice. And holding the Hand-Vice steddy in his left hand, he rests the Shank of the Punch pretty near its Face upon the Tach: and then with a small *Flat-File*, called a *Pillar-File*, in his right hand, holding the Smooth Thin Side of it towards the Footing of the Stem, he Files that Stem pretty near its due Fatness, and so by several reiterated proffers, lest he should File too much of the Stem away, he brings that Stem at last to its true Fatness. Then he measures with the Ascending *Face-Gage*, the Heighth of the Letter; For though the *Counter-Punch* was imagin'd  
(as



(as aforesaid) to be made to an exact Heighth for the inside of the Letter; yet with deeper or shallower Sinking it into the *Punch*, the inside oft proves higher or lower: Because, as aforesaid, the Superficies of the Face of the *Counter-Punch* is less than the true measure. But as it runs Sholdering into the Shank of the *Counter-Punch* the Figure or Form of the inside becomes bigger than the inside of the Letter ought to be. Therefore the deeper this Sholdering Shank is sunk into the Face of the *Punch*, the higher and broader will the Form of the inside of the Letter be, and the shallower it is Sunk in, the Shorter and Narrower by the Rule of Contraries.

He measures, as I said, with the Assending Face-Gage, and by it finds in what good Size the Letter is. If it be too high, as most commonly it is, because the Footing and Top are yet left Fat, then with several proffers he Files away the Footing and Top, bringing the Heighth nearer and nearer still, considering in his Judgment whether it be properest to File away on the Top or Footing, till at last he fits the Heighth of the Letter by the Assending Face-Gage.

But though he have fitted the Heighth of the Letter, yet if the *Counter-Punch* were made a little too little, or Sunk a little too shallow, not only the Footing will prove too Fat, but the Triangle above the Cross-stroke of *A* will be too small; or if too big, the Footing and part of the Top will be Filed away, when it is brought to a due Heighth, and then the Letter is Spoil'd, unless it be so deep Sunk,  
that

that by working away the Face, as aforesaid, he can regain the Footing and Top through the Slope-sholdering of the *Counter-Punch*, and also keep the inside of the Letter deep enough.

But if the Footing be too *Fat* or the Triangle of the Top too little in the Inside, he uses the Knife-backt Sculpter, and with one of the edges or both, that proceeds from the Belly towards the Point of the Sculpter ( which edges we will for distinction sake call *Angular edges* ) he by degrees and with several proffers Cuts away the Inside of the Footing, or opens the Triangle at the Top or both, till he hath made the Footing lean enough, and the Triangle big enough.

But if he works on the Triangle of the Top, he is careful not to Cut into the Straight of the Inside lines of the Stems, but to keep the Insides of that Triangle in a perfect straight line with the other part of the Inside of the Stem.

The small arch of a Circle on the Top of *A* is Fil'd away with a Sizable Round-File. And so for all other Letters that have Hollows on their Out-sides; he fits himself with a small File of that shape and Size that will fit the Hollow that he is to work upon: For thus the Tails of Swash Letters in Italick Capitals are Fil'd with half Round Files Sizable to the Hollows of them. But I instead of Round or Half-Round Files, in this Case, bespeak Pillar Files of several Thicknesses, and cause the *File-maker* to Round and Hatch the Edges: which renders the File strong and able to endure hard leaning on, without Breaking, which Round or Half-Round Files will not Bear.

I need

I need give no more Examples of Letters that are to be Counter-punched : And for Letters that need neither Counter-punching or Graving, they are made as the Out-sides of *A*, with Files proper to the shapes of their Stroaks.

¶ 4. *Of Graving and Sculpting the Insides of Steel Letters.*

The *Letter-Cutter* elects a *Steel Punch* or *Rod*, a small matter bigger than the Size of the Letter he is to Cut ; because the Topping or Footing Stroaks will be stronger when they are a little Bevell'd from the Face. The Face of these Letters not being to be Counter-punched are first Flatned and Smoothed, as was shewed, ¶ 3. Then with the proper *Gage*, viz. the Long, the Ascending, or else the Short *Face-Gage*, according as the Letter is that he intends to Cut, He measures off the exact Heighth of the Letter, Thus ; He first Files one of the Sides of the Face of the *Punch* (viz. that Side he intends to make the Foot of his Letter) exactly straight ; which to do, he screws his *Punch* pretty near the bottom end, with its intended Foot-side uppermost, aslope into one end of the Chaps of his *Hand-Vice*. So that the Shank of the *Punch* lies over the Chaps of the *Hand-Vice*, and makes an Angle of about 45 Degrees with the Superficies of the Chaps of it : Then he lays the under side of the Shank of his *Punch* aslope upon his *Tache*, in one of the Notches of it, that will best fit the size of his *Punch*, to keep it steady ; and so Files the Foot-Line of the *Punch*.

R

But

But he Files not athwart the sides of his *Punch* ; for that might make the Foot-Line Roundish, by a Mounting and Dipping the Hand is prone to ; as I shewed, *Vol. I. Fol. 15, 16.* But he holds his File so as the Length of it may hang over the Length of the Shank of the *Punch*, and dip upon it at the Face of the *Punch*, with a Bevel, or Angle, of about 100 Degrees with the Face of the *Punch*. This Angle you may measure with the *Beard-Gage*, described in *Plate 10. Fig. C.* at *k*. Then Filing with the File in this Position, the Foot-Line will be made a true straight Line. But yet he examines it too by applying the *Liner* to it ; and holding the *Punch* and *Liner* thus to the Light ; If the *Liner* touches all the way on the Foot-Line, he concludes it true ; if not, he mends it till it do.

Then he uses his proper *Steel-Gage*, and places the Sholder of it against the Shank of the *Punch* at the Foot-Line ; and pressing the Sholder of the *Steel-Gage* close against the Foot-Line, he, with the Tooth of the *Gage* makes a Mark or Race on the side of the Face, opposite to the Foot-line : And that Mark or Race shall be from the Foot-Line, the Bounds of the Heighth of that Letter.

Then on the Face he draws or marks the exact shape of the Letter, with a Pen and Ink if the Letter be large, or with a smooth blunted Point of a Needle if it be small : Then with sizable and proper shaped and Pointed Sculptors and Gravers, digs or Sculps out the Steel between the Stroaks or Marks he made on the Face of the *Punch*, and leaves the Marks standing on the Face.

If

If the Letter be great he is thus to Sculp out, he then, with a Graver, Cuts along the Insides of the drawn or marked Stroaks, round about all the Hollow he is Cutting in. And having Cut about all the sides of that Hollow, he Cuts other straight Lines within that Hollow, close to one another (either parallel or aslope, it matters not) till he have filled the Hollow with straight Lines; and then again, Cuts in the same Hollow, athwart those straight Lines, till he fill the Hollow with Thwart Lines also. Which straight Lines, and the Cuttings athwart them, is only to break the Body of Steel that lies on the Face of the *Punch* where the Hollow must be; that so the Round-Back'd Sculptor may the easier Cut through the Body of the Steel, in the Hollow, on the Face of the *Punch*; even as I told you, *Numb. 4. Vol. I. §. 2.* the Fore-Plain makes way for the Fine Plains.

The *Letter-Cutter* does not expect to perform this Digging or Sculpting at one single Operation; but, having brought the Inside of his Letter as near as he can at the first Operation, he, with the flat side of a Well-worn, Small, Fine-Cut, Half-round File, Files off the Bur that his Sculptors or Gravers made on the Face of the Letter, that he may the better and nicelier discern how well he has begun. Then he again falls to work with his Sculptors and Gravers, mending, as well as he can, the faults he finds; and again Files off the Bur as before, and mends so off, till the Inside of his Letter pleases him pretty well. But before every Mending he Files off the Bur, which else, as aforesaid, would obscure and hide the true shape of his Stroaks.



Having well shaped the Inside Stroaks of his Letter, he deepens the Hollows that he made, as well as he can, with his Sculptors and Gravers: And the deeper he makes these Hollows, the better the Letter will prove. For if the Letters be not deep enough, in proportion to their Width, they will, when the Letter comes to be Printed on, Print Black, and so that Letter is spoiled.

How deep these Hollows are to be, cannot be well asserted, because their Widths are so different, both in the same Letter, and in several Letters: Therefore he deepens them according to his Judgment and Reason. For Example, O must be deeper than A need be, because the Hollow of O is wider than the Hollow of A; A having a Cross Stroak in it; and the wider the Hollow is, the more apt will the wet Paper be to press deeper towards the bottom in Printing. Yet this in General for the Depth of Hollows; You may make them, if you can, so deep as the *Counter-Punch* is directed to be struck into the Face of the Punch. See ¶ 3. of this §.

Having with his Gravers and Sculptors deepned them so much as he thinks convenient, he, with a *Steel Punch*, pretty near fit to the shape and size of the Hollow, and Flatted on its Face, Flattens down the Irregularities that the Gravers or Sculptors made, by striking with a proper Hammer, upon the Hammer-end of the *Punch*, with pretty light blows. But he takes great care, that this *Flat-Punch* be not at all too big for the Hollow it is to be struck into, lest it force the sides of the Stroaks of the Letter out of their shape: And therefore also it is, that he strikes  
but

but easily, though often, upon the end of the *Flat-Punch*.

Having finished the Inside, he works the Outfides with proper Files ; as I shewed before, in Letter A; and smoothenes and Pollishes the Outside Stroaks and Face with proper worn-out small *Watch-makers* Files.

The Inside and Outside of the Face thus finished, he considers what Sholdering the Shank of the *Punch* makes now with the Face, round about the Letter. For, as the Shank of the Letter stands farther off the Face of any of the Stroaks, the Sholdering will be the greater when the Letter is first made ; because the Outfides of the Letter, being only shaped at first with Fine Small Files, which take but little Steel off, they are Cut Obtusely from the Shank to the Face, and the Steel of the Shank may with Rougher Files afterwards, be Cut down more Tapering to the Shank. For the Sholder of the Shank, as was said before in this ¶, must not make an Angle with the Face, of above 100 Degrees ; because else they would be, first, more difficult to Sink into Copper ; And Secondly, The broad Sholders would more or less (when the Letter is Cast in such Matrices) and comes to the Press, be subject, and very likely to be-smeare the Stroaks of the Letter ; especially, with an Hard Pull, and too wet Paper ; which squeezes the Face of the Letter deep into the Paper, and so some part of the Broad Sholdering of the Letter, receiving the Ink, and pressing deep into the Paper, flurs the Printed Paper, and so makes the whole Work shew very nasty and un-beautiful.

For these Reasons it is, that the Shank of the *Punch*, about the Face, must be Filed away (at least, so much as is to be Sunk into Copper) pretty close to the Face of the Letter; yet not so as to make a Right Angle with the Face of the Letter, but an Obtuse Angle of about 100 Degrees: For, should the Shank be Filed away to a Right Angle, *viz.* a Square with the Face, if any Footing or Topping be on the Letter, these fine Stroaks will be more subject to break when the *Punch* is Sunk into Copper, than when the Angle of the Face and Shank is augmented; because then those fine Stroaks stand upon a stronger Foundation. Therefore he uses the *Beard-Gage*, and with that examines round about the Letter, and makes the Face and Shank comply with that.

Yet Swash-Letters, especially *Q*, whose Swashes come below the Foot-Line, and whose Length reaches under the Foot-Line of the next Letter, or Letters in Composing, ought to have the Upper Sholder of that Swash Sculped down straight, *viz.* to a Right Angle, or Square with the Face; at least, so much of it as is to be Sunk into Copper: Because the Upper Sholder of the Swash would else be so broad, that it would ride upon the Face of the next Letter. Therefore the Swash-Letters being all Long Letters, the lower end of the Swashes reach as low as the Bottom-Line; which cannot be Filed Square enough down from the Head-Line, unless the Steel the Swash stands on, should be Filed from end to end, the length of the whole Shank of the *Punch*, which would be very tedious; and besides, would make

make that part of the Shank the Swash stands on so weak, that it would scarce endure Striking into the Copper. Therefore, as I said before, the Upper Sholder of the Swash ought to be Sculpted down: Yet I never heard of any *Letter-Cutters* that had the knack of doing it; but that they only Filed it as straight down as they could, and left the *Letter-Kerner*, after the Letter was Cast, to Kern away the Sholdering. Yet I use a very quick way of doing it; which is only by Resting the Back of a Graver at first, to make way; and afterwards a Sculptor, upon the Shank of the *Punch*, at the end of the Swash, one while; and another while on the Shank, at the Head, that the Swash may be Sculpted down from end to end: and Sculpting so, Sculp away great Flakes of the Steel at once, till I have Cut it down deep enough, and to a Right Angle.

Then he Hardens and Tempers the *Punch*; as was shewed, *Numb. 3. Vol. I. Fol. 57, 58.*

But though the *Punch* be Hardned and Temper'd, yet it is not quite finished: for, in the Hardning, the *Punch* has contracted a Scurf upon it; which Scurf must be taken off the Face, and so much of the sides of the Shank as is to be Sunk into Copper. Some *Letter-Cutters* take this Scurf off with small smooth Files, and afterwards with fine Powder of *Emerick*. The *Emerick* they use thus. They provide a Stick of Wood about two Handful long, and about a *Great-Primer*, or *Double-Pica* thick: Then in an Oyster-shell, or any sleight Concave thing, they powr a little Sallad-Oyl, and put Powder of *Emerick* to it, till it become of the Consistence of Batter  
made

made for Pan-cakes. And stirring this Oyl and *Emerick* together, spread or smear the aforefaid Stick with the Oyl and *Emerick*, and fo rub hard upon the Face of the *Punch*, and alfo upon part of the the Shank, till they have taken the Scurf clean off.

Mr. *Walberger* of *Oxford* uſes another way. He makes ſuch an Inſtrument as is deſcribed in *Plate 10.* at *H*, which we will, for diſtinction ſake, call the *Joynt-Flat-Gage*. This Inſtrument conſiſts of two Cheeks about nine Inches long, as a *b*, and are faſtened together at one end, as the Legs of a *Carpenter's* Joynt-Rule are in the Centre, as at *c*, but with a very ſtrong Joynt; upon which Centre, or Joynt, the Legs move wider, or cloſer together, as occaſion requires. Each Leg is about an Inch and a quarter broad, and an Inch and three quarters deep; viz. ſo deep as the Shank of the *Punch* is long. At the farther end of the Shank *b* (as at *d*) is let in an Iron Pin, with an Head at the farther end, and a ſquare Shank, to reach almoſt through a ſquare Hole in the Shank *b*, that it twiſts not about; and at the end of that Square, a round Pin, with a Male-Screw made on it, long enough to reach through the Shank *a*, and about two Inches longer, as at *e*; upon which Male-Screw is fitted a Nut with two Ears, which hath a Female-Screw in it, that draws and holds the Legs together, as occaſion requires a bigger or leſs *Punch* to be held in a proper Hole. Through each of the adjoining Infides of the Legs are made, from the Upper to the Lower Side, ſix, ſeven, or eight Semi-Circular Holes (or more or leſs, according to diſcretion) exactly Perpendicular to



to the upper and under Sides of each Leg, marked *a a a a*, *b b b b*. Each of these Semicircular Holes is, when joyned to its Match, on the other Leg to make a Circular Hole ; and therefore must be made on each Leg, at an equal distance from the Centre. These Holes are not all of an equal Size, but different Sizes : Those towards the Centre smallest, *viz.* so small, that the *Punch* for the smallest Bodied Letters may be pinched fast in them ; and the biggest Holes big enough to contain, pinch and hold fast the *Punches* for the great Bodied Letters. The upper and under sides of this *Joynt-Flat-Gage* is Faced with an Iron Plate, about the thickness of an Half Crown, whose outer Superficies are both made exactly Flat and Smooth.

When he uses it, he chuses an Hole to fit the Size of the *Punch* ; and putting the Shank of the *Punch* into that Hole, Sinks it down so low, till the Face of the *Punch*, stands just Level, or rather, above the Face of the *Joynt-Flat-Gage* : Then with a piece of an Hone, wet in Water, rubs upon the Face of the *Punch*, till he have wrought off the Scurf. At last, with a Stick and Dry *Putty*, Polishes it.

I like my own way better than either of the former : For, to take off the Scurf with Small Files spoils the Files ; the Face of the *Punch* being Hard, and the Scurf yet Harder : And besides, endangers the wronging the Face of the *Punch*.

The *Joynt-Flat-Gage* is very troublesome to use, because it is difficult to fit the Face of the *Punch*, to lie in the Plain of the Face of the *Gage* ; especially, if, in making the Letter, the Shank be Filed Taper-

ing, as it most times is. For then the Hammer-end of the *Punch* being bigger than the Face-end, it will indeed Pinch at the Hammer-end, whilst the Face-end stands unsteady to Work on. But when the *Punch* is fitted in, it is no way more advantageous for Use, than the Chaps of the *Hand-Vice* I mentioned in ¶. 3. of this §.

Wherefore, I fit the *Punch* into the Chaps of the *Hand-Vice*, as I shewed in the aforefaid ¶. and with a fine smooth Whet-stone and Water, take the Scurf lightly off the Face of the *Punch*; and afterwards, with a fine smooth Hone and Water, work down to the bare bright Steel. At last, drying the *Punch* and Chaps of the *Hand-Vice* with a dry Rag, I polish the Face of the *Punch* with Powder of Dry *Brick* and a Stick, as with *Putty*.

¶. 5. *Some Rules he considers in using the Gravers, Sculptors, Small Files, &c.*

1. When he is Graving on the Inside of the Stroak, either to make it Finer or Smoother, he takes an especial care that he place his Graver or Sculptor so, as that neither of its Edges may wrong another Stroak of the Letter, if they chance (as they often do) to slip over, or off an extuberant part of the Stroak he is Graving upon. And therefore, I say, he well considers how he is to manage the edges of his Graver. For there is no great danger of the point of his Graver after the inside Stroaks are form'd, and the Hollows of the Letter somewhat deepned; but in the edges there is: For the point  
in

in working lies always below the Face of the Letter, and therefore can, at most, but slip below the Face, against the side of the next Stroak ; but the edges lying above the Face of the Letter, may, in a slip, touch upon the Side and Face of the next Stroak, and wrong that more or less, according as the force of the Slip was greater or smaller. And if that Stroak it jobs against were before wholly finished, by that job the whole Letter is in danger to be spoiled ; at the best, it cannot, without Filing the Letter lower, be wrought out ; which sometimes is a great part of doing the Letter anew : For he takes special care that neither any dawb, or the least extuberant bunching out be upon the inside of the Face of the Stroak, but that the inside of the Stroak (whether it be Fat or Lean) have its proper Shape and Proportion, and be purely smooth and clean all the way.

If on the inside of the Stroak the Graver or Sculptor have not run straight and smooth on the Stroak, but that an Extuberance lies on the Side, that Extuberance cannot easily be taken off, by beginning to Cut with the Edge of the Graver or Sculptor just where the Extuberance begins : Therefore he fixes the Point of his Graver or Sculptor in the Bottom of the Hollow, just under the Stroak where the Extuberance is, and leans the Edge of his Graver or Sculptor upwards ; so as in forcing the Point of the Graver or Sculptor forwards, at the Bottom of the Hollow, the Edge of the Graver or Sculptor may slide tenderly along, and take along with it a very small, nay, invisible Chip of the most Prominent Part of the Extuberance ; and so, by this Process reiterated

ted often, he, by small Degrees, Cuts away the Extuberant part of the Stroak.

2. He is careful to keep his Gravers and Sculptors always Sharp, by often Sharpening them on the Oyl-Stone, which for that purpose he keeps ready at hand, standing on the Bench : For if a Graver or Sculptor be not sharp, it will neither make riddance, or Cut smooth ; but instead of Cutting off a small Extuberancy, it will rather stick at it, and dig into the Side of the Stroak.

3. He Files very tenderly with the Small Files, especially with the Knife-Files, as well because they are Thin and Hard, not Temper'd, and therefore would snap to pieces with small violence ; as also, lest with an heavy hand he should take away too much at once of that Stroak he is working upon.

§. 14. ¶ 1. *Some Rules to be observed by the Letter-Cutter, in the Cutting Roman, Italick, and the Black English Letter.*

1. The Stem and other Fat Stroaks of Capital *Romans* is five Parts of forty and two (the whole Body :) Or, (which is all one) one sixth part of the Heighth of an Ascending Letter (as all Capitals are Ascendents) as has been said before. *Albertus Durer* took his Measure from the Heighth of Capitals, and assigned but one tenth part for the Stem.

2. The Stem, and other Fat Stroaks of Capitals *Italick*, is four parts of forty and two, (the Body.)

3. The Stem, and other Fat Stroaks of Lower-Case *Roman*, is three and an half parts of forty and two, (the Body.)

4. The

4. The Stem, and other Fat Stroaks of Lower-Cafe *Italick*, is three parts of forty and two, (the Body.)

5. Of *English*, the Short Letters stand between nine parts of the Bottom-Line, and nine parts from the Top-Line ; *viz.* upon three and thirty parts of forty and two, (the Body.)

6. The Stem of *English* Capitals is six parts of forty and two, (the Body.)

7. The Stem of *English* Lower-Cafe Letters is four parts of forty and two, (the Body.)

¶ 2. Of Terms relating to the Face of Letters,  
and their Explanation.

The Parts of a *Punch* are already described in §. 13. ¶ 1. of this Volumne ; and so is the Body : But the several Terms that relate to the Face of Letters are not yet defined. Now therefore you must note, that the Body of a Letter hath four principal Lines passing through it (or at least imagined to pass through it) at Right Angles to the Body ; *viz.* The Top-Line, The Head-Line, The Foot-Line, and The Bottom-Line.

Between two of these Lines is contained the Height of all Letters.

These are called *Lines*, because the Tops, the Heads, the Feet and the Bottoms of all Letters (when Complicated by the *Compositor*) stand ranging in these imagin'd Lines, according as the Height and Depth of each respective Letter properly requires.



The Long Letters are (as I told you in §. 13. ¶. 1. of this Volumn) contained between the Top and Bottom-Lines, The Ascending Letters are contained between the Top and Foot-Lines, The Descending Letters are contained between the Head and Bottom-Lines, and The Short Letters are contained between the Head and Foot-Lines.

Through what Parts of the Body all these Lines pass, you may see by the Drafts of Letters, and the following Descriptions.

What the Long Letters, Ascending Letters, and Short Letters are, I shewed in the afore-cited ¶. Therefore I shall now proceed to particular Terms relating to the Face. As,

1. The Topping, is the straight fine Stroak or Stroaks that lie in the Top-Line of Ascending Letters: In *Roman* Letters they pass at Right Angles through the Stems; but in *Italicks*, at Oblique Angles to the Stems; as you may see in the Drafts of Letters, B, *B*, H, *H*, I, *I*, &c.

2. The Footing, is the straight fine Stroak or Stroaks that lie in the Foot-Line of Letters, either Ascending or Descending. In *Romans* they pass at Right Angles through the Stem, but in *Italicks*, at Oblique Angles; as you may see in B, *B*, H, *H*, I, *I*, &c.

3. The Bottom-Footing, is the straight fine Stroaks that lie in the Bottom-Line of Descending Letters. In *Romans* they pass at Right Angles through the Stem; but in *Italicks* at Oblique Angles; as you may see p, *p*, q, *q*.

4. The

4. The Stem is the straight Fat Stroak of the Letter : as in B, *B*, the straight Stroak on the Left Hand is the Stem ; and I, *I*, is all Stem, except the Footing and Topping.

5. Fat-Stroaks. The Stem or broad Stroak in a Letter is called Fat ; as the Right Hand Stroak in A, and part of the great Arch in B, are Fat Stroaks.

6. Lean Stroaks, are the narrow fine Stroaks in a Letter ; as the Left Hand Stroak of A, and the Right Hand Stroak of V are Lean.

7. Beak of Letters, is the fine Stroak or Touch that stands on the Left Hand of the Stem, either in the Top-Line, as b d h, &c. or in the Head-Line, as i, m, n, &c. Yet f, g, i, *f*, *g*, *i*, have Beaks on the Right Hand of the Stem.

8. Tails of Letters, is a Stroak proceeding from the Right Hand Side of the Stem, in the Foot-Line ; as a d t u : and most *Italick* Lower-Case Letters have Tails : As also have most Swash Letters. But several of their Tails reach down to the Bottom-Line.

9. Swash Letters are *Italick* Capitals ; as you see in Plate 15.

Thus much of *Letter-Cutting*. The next *Exercises* shall (God willing) be upon *Making Matrices, Making Molds, Casting and Dressing of Letters, &c.*

F I N I S.

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Plate II.

A B C D E

A Scale of 42 Parts Vis. the Body.

F G H I J

K L M N

O P Q R

S T V U

W X Y Z





A E a b c d e f

A Scale of 42 Parts viz the Body.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

g h i j k l m n

o p q r f s t v

u w x y z &

ct ft fh ffi æ œ

I 2 3 4 5 6 7 8 0



Plate 12.

A B C D E

A Scale of 42 Parts viz. the Body.

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42

F G H I K

L M N O

P Q R S T

V W X Y

Z AE



a b c d e f g h i

A Scale of 42 Parts viz the Body.

j k l m n o p q

r s t u v w x

y z & ct st sh

æ œ ss ff fh





Plate 15.

A B C D E

A Scale of 42 Parts viz.  $\frac{1}{2}$  Body.

F G H f K

M N P

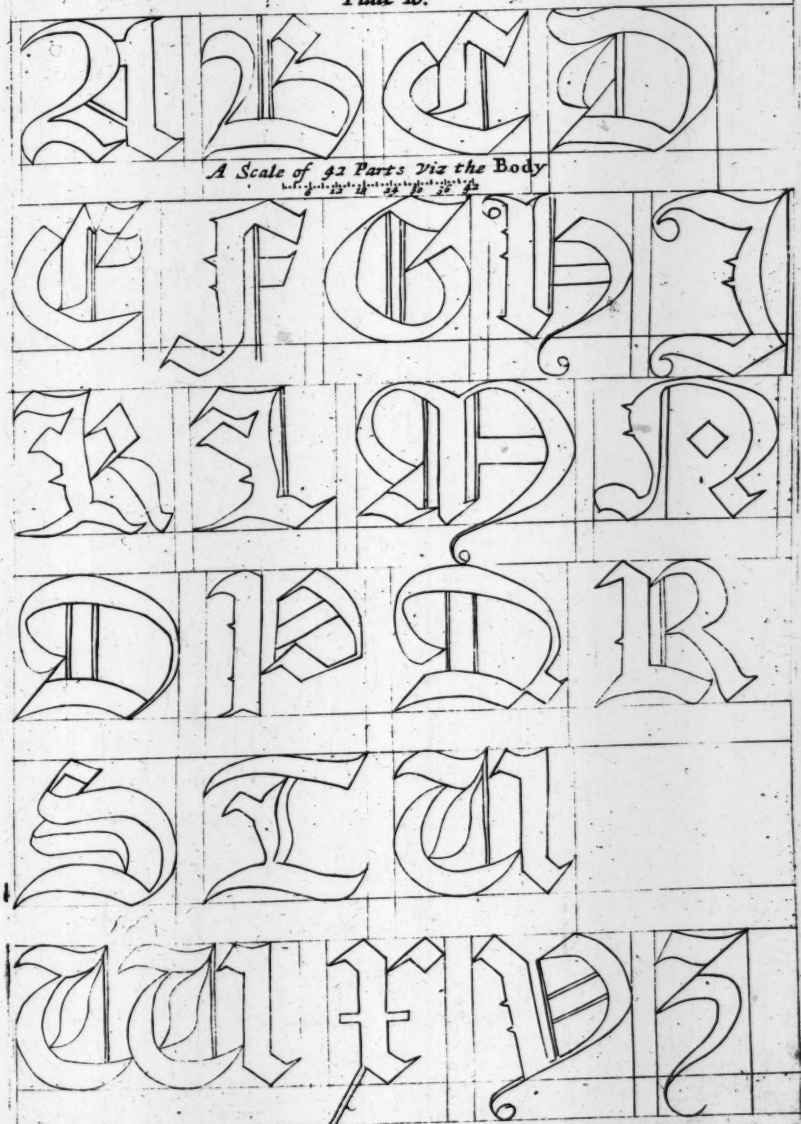
Q R T

U X Y Z

AE



Plate 16.







a b c d e f g h i j

A Scale of 42 Parts viz the Body.

k l m n o p q r

s t u v w x y

z A B C D E F G H I J

K L M N O P Q R S T U V

W X Y Z ? !

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no  
no  
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**MECHANICK EXERCISES:**

Or the Doctrine of

**Handy-works.**

Applied to the A R T of

*Mold-Making, Sinking the Matrices,  
Casting and Dressing of***Printing-Letters.**

The Second VOLUME.

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§ 15. ¶ 1. *Of making the Mold.*

**T**HE *Steel Punches* being thus finish'd,  
as afore was shewed, they are to be  
funk or struck into pieces of *Copper*, a-  
bout an Inch and an half long, and one  
quarter of an Inch deep; but the thick-  
ness not assignable, because of the different thick-  
nesses in Letters, as was shewed in § 2. and shall fur-  
ther be shewed, when I come to the sinking and ju-  
stifying

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stifying of *Matrices*. But before these *Punches* are sunk into *Copper*, the *Letter-Founder* must provide a *Mold* to justify the *Matrices* by: And therefore it is proper that I describe this *Mold* to you before I proceed any farther.

I have given you in Plate 18. at A, the Draft of one side or half of the *Mold*; and in Plate 19. at B, its Match, or other half, which I shall in general thus describe.

Every *Mold* is made of two parts, an under, and an upper Part; the under part is delineated at A, in Plate 18, the upper part is marked B, in Plate 19, and is in all respects made like the under part, excepting the *Stool* behind, and the *Bow*, or *Spring* also behind; and excepting a small roundish *Wyer* between the *Body* and *Carriage*, near the *Break*, where the under part hath a small rounding *Groove* made in the *Body*. This *Wyer*, or rather *Half-Wyer* in the upper part makes the *Nick* in the *Shank* of the *Letter*, when part of it is received into the *Grove* in the under part.

These two parts are so exactly fitted and gaged into one another, (*viz.* the *Male Gage*, marked C in Plate 19, into the *Female-Gage* marked g, in Plate 18.) that when the upper part of the *Mold* is properly placed on, and in the under part of the *Mold* both together, makes the entire *Mold*, and may be slid backwards for Use so far, till the Edge of either of the *Bodies* on the middle of either *Carriage* comes just to the Edge of the *Female-Gages*, cut in each *Carriage*: And they may be slid forwards so far, till the *Bodies* on either *Carriage* touch each other. And the sliding of these two parts of the *Mold* backwards, makes

makes the *Shank* of the Letter thicker, because the Bodies in each part stand wider asunder; and the sliding them forwards makes the *Shank* of the Letter thinner, because the Bodies on each part of the *Mold* stand closer together.

This is a general Description of the *Mold*; I come now to a more particular Description of its parts.

a The *Carriage*.

b The *Body*.

c The *Male-Gage*.

d e The *Mouth-Piece*.

f i The *Register*.

g The *Female-Gage*.

h The *Hag*.

a a a a The *Bottom Plate*.

b b b The *Wood* the *Bottom Plate* lies on.

c c e The *Mouth*.

d d The *Throat*.

e d d The *Pallat*.

f The *Nick*.

g g The *Stool*.

h b g The *Spring* or *Bow*.

I have here given you only the Names of the parts of the *Mold*, because at present I purpose no other Use of it, than what relates to the sinking the *Punches* into the *Matrices*: And when I come to the casting of Letters, You will find the Use and Necessity of all these Parts.



¶ 2. *Of the Bottom-Plate.*

The *Bottom Plate* is made of *Iron*, about two Inches and three quarters long, and about the same breadth; its thickness about a *Brevier*: It is planisht exactly flat and streight: It hath two of its *Fore-Angles*, as a cut off either straight or rounding, according to the pleasure of the Work-man.

About the place where the middle of the *Carriage* lies, is made a Hole about a *Great Primmer* square, into which is rivetted on the upper side a Pin with a Sholder to it, which reaches about half an Inch through the under side of the *Bottom Plate*. This Pin on the under side the *Bottom Plate* is round, and hath a *Male-Screw* on its end. This Pin is let through a Hole made in the Wood of the *Mold* to fit it; so that when a square *Nut*, with a *Female-Screw* in it, is turned on the *Male-Screw*, it may draw and fasten the *Half Mold* firm to the Wood.

The Hind side of the *Carriage* lies on this *Bottom-Plate*, parallel to the Hind side of it, and about a *Two-Lin'd-Englisch* within the Hind Edge of it; and so much of this *Bottom-Plate* as is between the *Register* and the left hand end of the *Carriage* (as it is posited in the Figure) is called the *Stool*, as *g g* in the under half of the *Mold*, because on it the lower end of the *Matrice* rests; but on the upper half of the *Mold* is made a square Notch behind in the *Bottom-Plate*, rather within than without the Edge of the *Carriage*, to reach from the *Register*, and half an Inch towards the left hand (as it is posited in the Figure) that

that the upper part of the fore-side of the *Matrice* may stand close to the *Carriage* and *Body*.

¶ 3. *Of the Carriage.*

On the *Bottom-Plate* is fitted a *Carriage*, (as a) This *Carriage* is almost the length of the *Bottom-Plate*, and about a *Double Pica* thick, and its Breadth the length of the Shank of the Letter to be cast.

This *Carriage* is made of *Iron*, and hath its upper side, and its two narrow sides filed and rubed upon the using *File*, exactly straight, square and smooth, and the two opposite narrow sides exactly parallel to each other.

On one end of the *Carriage*, as at g, is made a long *Notch* or *Slit*, which I call the *Female-Gage*: It is about a *Double Pica* wide, and is made for the *Male-Gage* of the other part of the *Mold* to fit into, and to slide forwards or backwards as the thickness of the Letter to be cast may require.

¶ 4. *Of the Body.*

Upon the *Carriage* is fitted the *Body*, as at b. This *Body* is also made of *Iron*, and is half the length of the *Carriage*, and the exact breadth of the *Carriage*; but its thickness is alterable, and particularly made for every intended *Body*.

About the middle of this *Body* is made a square Hole, about a *Great Primmer*, or *Double Pica* square; and directly under it is made through the *Carriage* such another Hole exactly of the same size.

T 3

¶ 5. *Of*

## ¶ 5. Of the Male-Gage.

Through these two Holes, viz. That in the *Body*, and that in the *Carriage*, is fitted a square *Iron Shank* with a *Male-Screw* on one End, and on the other End an Head turning square from the square *Shanck* to the farther end of the *Body*, as is described at c; but is more particularly described apart at B in the same Plate, where B may be called the *Male-Gage*: For I know no distinct Name that *Founders* have for it, and do therefore coyn this:

a The square *Shanck*.

b The *Male-Screw*.

This *square Shanck* is just so long within half a *Sca-board* thick as to reach through the *Body, Carriage*, and another square Hole made through the *Bottom-Plate*, that so when a *square Nut* with a *Female-Screw* in it is turned on that *Pin*, the *Nut* shall draw and fasten the *Body* and *Carriage* down to the *Bottom-Plate*.

The Office of the *Male-Gage* is to fit into, and slide along the *Female-Gage*.

## ¶ 6. Of the Mouth-Piece.

Cloſe to the *Carriage* and *Body* is fitted a *Mouth-Piece* marked d e. *Letter-Founders* call this altogether a *Mouth-Piece*: But that I may be the better understood in this present purpose, I must more nicely distinguish its parts, and take the Freedom to elect Terms for them, as first,

c c e The *Mouth*.

d The

d The *Palate*.

c c e d The *Jaws*.

d d The *Throat*.

Altogether (as aforesaid) the *Mouth-Piece*.

The *Mouth-Piece* hath its *Side* returning from the *Throat* filed and rubb'd on the *Using File* exactly straight and square to its *Bottom-side*, because it is to joyn close to the *Side* of the *Carriage* and *Body*; but its upper *Side*, viz. the *Palate* is not parallel to the *Bottom*, but from the *Side d d*, viz. the *Throat* falls away to the *Mouth e*, making an *Angle* greater or smaller, as the *Body* that the *Mold* is made for is bigger or less: For small *Bodies* require but a small *Mouth*, because small *Ladles* will hold Metal enough for small Letters; and the smaller the *Ladle*, the finer the *Geat* of the *Ladle* is; and fine *Geats* will easier hit the *Mouth* (in a Train of Work) than the coarse *Geats* of Great *Ladles*: Therefore it is that the *Mouth* must be made to such a convenient Width, that the *Ladle* to be used and its *Geat*, may readily, and without flabbering, receive the Metal thrown into the *Mold*.

But again, if the *Mouth-Piece* be made too wide, viz. the *Jaws* too deep at the *Mouth*, though the *Geat* of the *Ladle* does the readier find it, yet the *Body* of the *Break* of the *Letter* will be so great, that first it heats the *Mold* a great deal faster and hotter; and secondly, it empties the *Pan* a great deal sooner of its Metal, and subjects the Workman sometime to stand still while other Metal is melted and hot: Therefore Judgment is to be used in the width of the *Mouth*; and though there be no Rule for the width of it; yet this in general for such *Molds* as I  
mak.

make, I observe that the *Orifice* of the *Throat* may be about one quarter of the *Body* for small Bodies; but for great Bodies less, according to Discretion, and the *Palate* about an Inch and a quarter long from the *Body* and *Carriage*. The reason that the *Orifice* of the *Throat* is so small, is, because the Substance at the end of the *Shanck* of the Letter ought also to be small, that the *Break* may easier break from the *Shanck* of the Letter, and the less subject the *Shanck* to bowing; for the bowing of a Letter spoils it; and the reason why the *Palate* is so long, is, that the *Break* being long, may be the easier finger'd and manag'd in the breaking.

If it be objected, that since the smallness of the *Break* at the end of the *Shanck* of the Letter is so approvable and necessary for the reason aforesaid, then why may not the *Break* be made much more smaller yet? The Answer will be, No; because if it be much smaller than one quarter of the *Body*, Metal enough will not pass through the *Throat*, to fill both the *Face* and *Shanck* of the Letter, especially if the Letter to be cast prove thin.

Near the *Throat* and *Jaw* is made straight down through the *Palate* a square Hole (as at *k*.) This square Hole hath all its Sides on the *Upper-Plain* of the *Palate* opened to a *Bevel* of about 45 Degrees, and about the depth of a thick *Scaboard*. Into this square *Hole* is fitted a square *Pin* to reach through it; and within half a *Scaboard* through a square *Hole*, made just under it in the *Bottom-Plate* which the *Mouth-Peice* lies upon. On the upper end of this square *Pin* is made a square *Sholder*, whose under sides are filed *Bevil* away, so as the



to comply and fall just into the *Bevil* made on the *Palate* aforesaid, and on the under end of the *Pin* is made a *Male-screw* long enough to contain a square *Nut*, with a *Female-screw* in it about a *Pica* or *Englisch* thick, which *Nut* being twisted about the *Pin* of the *Male-screw*, draws and fastens the *Mouth-piece* close down to the *Bottom-Plate*, and also close to the *Carriage* and *Body* of the *Mold*.

Note, that the square *Hole* made in the *Bottom-Plate* to receive the square *Shanck* of the *Pin*, must be made a little wider than just to fit the square *Shanck* of the *Pin*, because the *Mouth-piece* must be so placed, that the end of the *Jaw* next the *Throat* must lie just even with the *Body* it is to be joyned to; and also that the *Throat* of the *Mouth-piece* may be thrust perfectly close to the *Sides* of the *Carriage* and *Body*: And when Occasion requires the *Shanck* of the *Letter* to be lengthened, it may be set farther off the *Carriage*, that an *Assidue*, or sometimes a thin *Plate* of *Brass* may be fitted in between the *Carriage* and the *Throat* of the *Mouth-piece*, as shall farther be shewed when I come to justify the *Mold*.

#### ¶ 7. Of the Register.

Behind the *Mold* is placed the *Register*, as at *f i h*, which I have also placed apart in the aforesaid *Plate*, as at *C*, that it may the more perspicuously be discerned, and a more particular account of its parts be given, which are as follows:

*C a a b c d e* The Register.

*a a* The *Sholders*.

*U*

*b c* The

*b c* The Neck.

*d* The Cheek returning square from the Plate of the Register, and is about an *English* thick.

*e* The Screw Hole.

It is made of an *Iron* Plate about a *Brevier* thick; its upper Side is straight, but its under Side is not: For at *a a* projects downwards a small piece of the same Plate, which we may call the *Sholders*, of the Form you see in the Figure. These *Sholders* have two small *Notches* (as at *b c*) filed in them below the *Range* on the under side of the *Register*, which we will call the *Neck*, and is just so wide as the *Bottom-Plate* is thick. This *Neck* is set into a square *Notch*, filed so far into the *Bottom-Plate*, that the flat inside of the *Register* may stand close against the hind side of the *Carriage* and *Body*; and this *Notch* is filed so wide on the left Hand, that when the side *b* of the *Neck* stands close against the left-hand Side of this *Notch* (as it is posited in the Figure) the *Cheek* of the *Register* stands just even with the Edge of the *Body*. And this *Notch* is also filed so wide on the right-Hand Side, that when the *Neck* at *c* stands close against the right-hand Side of the *Notch*, the *Cheek* of the *Register* may remove an *m*, or an *m* and an *n* from the edge of the *Body* towards the right hand: And the *Sholders a a* are made so long, that when either Side of the *Neck* is thrust close against its corresponding side in the *Notch* of the *Bottom-Plate*, the upper Edge of the opposite *Sholder* shall hook or bear against the under side of the *Bottom-Plate*, and keep the whole *Register* steady, and directly upright to the Surface of the *Bottom-Plate*.

In

In the Plate of the *Register*, is made a long square Hole, as at *e*, just wide enough to receive the *Pin* of a *Male-screw*, with a *Sholder* to it, which is to fit into a *Female-screw*, made in the Edge of the *Carriage*, that when the *Male-screw* is turned about in the *Female-screw* in the *Carriage*, it shall draw the *Sholder* of the said *Male-screw* hard against the upper and under Sides of the square Hole in the Plate of the *Register*, close to the side of the *Carriage* and *Body*.

The reason why the Hole in the Plate of the *Register* is made so long, is that the *Cheek* of the *Register* may be slid forwards or backwards as occasion requires; as shall be shewn when I come to justifying the *Mold*.

#### ¶ 8. Of the Nick.

In the upper half of the *Mold*, at about a *Pica* distance from the *Throat*, is fitted into the under side of the *Body* the *Nick*: It is made of a piece of *Wyer* filed flat a little more than half away. This *Nick* is bigger or less, as the *Body* the *Mold* is made for is bigger or less; but its length is about two *m*'s. It is with round *Sculptors* let exactly into the under side of the *Body*.

In the under half of the *Mold*, is made at the same distance from the *Throat*, on the upper side of the *Body*, a round *Groove*, just fit to receive the *Nick* in the upper half.

## ¶ 9. Of the Bow or Spring.

This is a long piece of hard *Iron Wyer*, whose Diameter is about a *Brevier* thick, and hath one end fastned into the Wood of the under half of the *Mold*, as at *b*; but it is so fastned, that it may turn about in the Hole of the Wood it is put into: For the end of it being batter'd flat, a small Hole is drilled through it, into which small Hole the end of fine *Lute-string Wyer*, or somewhat bigger is put, and fastned by twisting about half an Inch of the end of the *Lute-string* to the rest of the *Lute-string*: For then a considerable Bundle of that *Wyer*, of about the Size of a Doublet Button, being wound behind the Hole, about the end of the *Spring*, will become a *Sholder* to it, and keep the end of the *Spring* from slipping through the Hole in the Wood: But this *Button* or *Sholder* must also be kept on by thrusting another piece of *Wyer* stiff into the Hole made on the end of the *Spring*, and crooking that *Wyer* into the Form of an S, that it slip not out of the Hole.

The manner how the *Spring* is bowed, you may see in the Figure: But just without the Wood is twisted upon another *Wyer* about an *Englisch* thick five or six turns of the *Wyer* of the *Spring*, to make the whole *Spring* bear the stronger at its point: For the Office of the *Spring* is with its Point at *g*, to thrust the *Matrice* close against the *Carriage* and *Body*.

¶ 10. Of

¶ 10. *Of the Hooks, or Hagg.*

These are *Iron Wyers* about a *Long Primmer* thick: Their Shape you may see in the Figure: They are so fastned into the Wood of the *Mold*, that they may not hinder the *Ladle* hitting the *Mouth*. Their Office is to pick and draw with their Points the *Break* and *Letter* out of the *Mold* when they may chance to stick.

¶ 11. *Of the Woods of the Mold.*

All the *Iron Work* aforesaid of the *Mold* is fitted and fastned on two Woods, viz. each half one, and each Wood about an Inch thick, and of the shape of each respective *Bottom-Plate*. The Wood hath all its Sides except the hind-side, about a *Pica* longer than the *Bottom-Plate*; but the hind-side lies even with the *Bottom-Plate*. The *Bottom-Plate*, as afore was said in ¶ 2. of this §. hath an *Iron Pin* on its under side, about half an Inch long, with a *Male-screw* on its end, which *Pin* being let fit into an Hole in the Wood does by a *Nut* with a *Female-screw* in it draw, all the *Iron Work* close and fast to the Wood.

But because the Wood is an Inch thick, and the *Pin* in the *Bottom-Plate* but half an Inch long, therefore the outer or under side of the Wood (as posited in the Figure) hath a wide round Hole made in it flat at the Bottom, to reach within an *English*, or a *Great Primmer* of the upper side of the Wood. This round Hole is wide enough to receive the *Nut* with the *Fe-*



*Male-screw* in it; and the *Pin* being now long enough to receive the *Female-screw* at the wide Hole, the *Female-screw* may with *round nosed Plyers* be turned about the *Male-screw* on the *Pin* aforesaid, till it draw all the *Iron Work* close to the *Wood*.

The *Wood* behind on the upper half is cut away as the *Bottom-Plate* of that half is; and into the thickness of the *Wood*, close by the right and left-hand side of this *Notch* is a small square *Wyer-staple* driven, which we may call the *Matrice-Check*; for its Office is only to keep the *Shanck* of the *Matrice* from flying out of this *Notch* of the *Mold* when the *Caster* is at Work. And the *Nuts* and *Screws* of the *Carriage* and *Mouth-piece*, &c. that lie under the *Bottom-Plate*, are with small *Chissels* let into the upper side of the *Wood*, that the *Bottom-plates* may lie flat on it.

#### Sect. XVI. Of justifying the Mold.

Altho' the *Mold* be now made; nay, very well and Workman-like made, yet is it not imagin'd to be fit to go to work withal; as well because it will doubtless Rag (as *Founders* call it; for which Explanation see the Table) as because the *Body*, Thickness, Straightness, and length of the *Shanck* must be finish'd with such great Nicety, that without several Proofs and Tryings, it cannot be expected to be perfectly true.

Therefore before the sinking and justifying the *Matrices*, the *Mold* must first be *Justified*: And first, he justifies the *Body*, which to do, he casts about twenty *Proofs* or Letters, as they are called, though it matters

matters not whether the *Shanks* have yet Letters on them or no. These *Proofs* he sets up in a *Composing-stick*, as is described in § 17. ¶ 2. Plate 19. at G, with all their *Nicks* towards the right Hand, and then sets up so many Letters of the same *Body*, (which for Distinction-sake we will call *Patterns*) that he will justify his *Body* too, upon the *Proofs*, with all their *Nicks* also to the right Hand, to try if they agree in length with the same Number of Letters that he uses for his *Pattern*; which if they do not, for very seldom they do, but by the Workman's fore-cast are generally somewhat too big in the *Body*, that there may be Substance left to justify the *Mold*, and clear it from *Ragging*. Therefore the *Proofs* may drive out somewhat, either half a Line (which in *Founders* and *Printers* Language is half a *Body*) or a whole Line. (more or less.)

He also tries if the two sides of the *Body* are parallel, viz. That the *Body* be no bigger at the *Head* than at the *Foot*; and that he tries by taking half the number of his *Proofs*, and turning the Heads of them lays them upon the other half of his *Proofs*, so that if then the *Heads* and *Feet* be exactly even upon each other, and that the Heads and Feet neither drive out, nor get in, (*Founders* and *Printers* Language, for which see the Table) the two sides of the *Body* are parallel; but if either the *Head* or *Foot* drives out, the two sides of the *Body* are not parallel, and must therefore be mended.

And as he has examin'd the Sides of the *Body* so also he examines the thickness of the Letter, and tries if the two Sides of the thickness be also parallel, which  
to

to do, he sets up his *Prooves* in the *Composing-stick* with their *Nicks* upwards. Then taking half of the *Prooves*, he turns the *Heads* and lay the *Heads* upon the *Feet* of the other half of his *Prooves*, and if the *Heads* and *Feet* lies exactly upon each other and neither *drive-out* or *get-in* the two Sides of the thickneses are parallel. But if either the *Head* or *Foot drive-out* the two Sides of the thickneses are not parallel; and must therefore be mended.

Next, he considers whether the sides of the *Body* be straight, first by laying two Letters with their *Nicks* upwards upon one another, and holding them up in his Fingers, between his Eye and the Light, tries if he can see Light between them: For if the least Light appear between them, the *Carriage* is not straight. Then he lays the *Nicks* against one another, and holds them also against the Light, as before: Then he lays both the *Nicks* outward, and examines them that way, that he may find whether either or both of the *Carriages* are out of straight.

But we will suppose now the *Body* somewhat too big, and that it drives out at the *Head* or *Foot*; and that the thickness *drives-out* at the *Head* or *Foot* and that the Sides of the *Body* are not straight. These are Faults enough to take the *Mold* asunder: but yet if there were but one of these Faults it must be taken asunder for that; by unscrewing the *Male-Gage*, to take the *Body* off the *Carriage*, and the *Carriage* off the *Bottom-Plate*.

Having found where the Fault of one or both sides of the *Body* is, he lays the *Body* down upon the *Using File*; and if the Fault be extuberant, he rubs the  
Extu-

Extuberancy down, by pressing his Finger or Fingers hard upon the opposite side of the Body, just over the extuberant part; and so rubbing the Body hard forwards on the *Using-File*, and drawing it lightly backwards, he rubs till he has wrought down the extuberancy, which he examines by applying the *Lyner* to that side of the Body, and holding it so up between his Eye and the Light, tries whether or not he *Lyner* ride upon the part that was extuberant; which if it do, the extuberancy is not sufficiently rub'd off, and the former Process must again begin and be continued till the extuberancy be rub'd off. And if the Body were too big, he by this Operation works it down: Because the extuberancy of the *Body* rid upon the *Carriage*, and bore it up.

And if the fault be a *Dawk*, or Hollow in the *Body*, then he Works the rest of that side of the *Body* down to the bottom of the *Dawk*, which by applying the *Lyner* (as afore) he tries, and this also lessens the *Body*.

If the *Body* drive-out at *Head* or *Foot*, he lays the weight of his Fingers heavy at that side or end of the *Body* which is too thick, and so rubs that down harder.

If the thickness of the Letter, drive-out at *Head*, or *Foot*, he Screws the *Body* into the *Vice*, and with a flat sharp *File*, files the *Side* down at the *Head*, or *Foot*. At the same time, if the *Shanck* of the Letter be not Square, he mends that also, and smooth-files it very well.

X

Then

Then he puts the *Mold* together again : And melting, (or laying aside) his first *Proofs*, lest they should make him mistake, he again *Casts* about twenty New *Proofs*, and examines by them as before, how well he has mended the *Body*, and how near he has brought the *Body* to the size of the *Pattern* : For he does not expect to do it the *First*, *Second*, or *Seventh* time ; but mends on, on, on, by a little at a time, till at last it is so finisht.

If the *Body* prove too small, it is underlaid with a thick or a thin *Affidue* ; or sometimes a thin *Plate* of *Brass*.

Then he examines the *Mouth-piece*, and sees that the *Jaws* slide exactly true, upon every part of the *Pallat* without riding.

If the *Throat* of the *Mouth-piece* lie too low, as most commonly it is designed so to do ; Then a *Plate* of *Brass* of a proper thickness is laid under it to raise it higher.

He also Justifies the *Registers*, making their *Cheeks* truly Square. And Screwing them about an n from the Corner of the *Body*.

He tries that the *Male* and *Female-Gages* fit each other exactly, and lie directly straight along, and parallel to both the *Sides* of the *Carriage*.

All this thus performed he needs not ( perhaps ) take the *Mold* assunder again. But not having yet consider'd, or examin'd the length of the *Shanck* of the *Letter*, he now does ; and if it be somewhat too long ( as we will suppose by forecast it is ) then the *Body* and *Carriage* being Screwed together, and both the Halves fitted in their *Gages*, the Edges of the  
Carri-



*Carriage* and *Body* are thus together rub'd upon the *Using-File*, till the *Carriage* be brought to an exact length.

Having thus (as he hopes) finish'd the justifying of the *Mold*; and put it together, and Screwed it fast up, he puts the two Halves together, and then Rubs or Slides them hard against one another, to try if he can perceive any little part of the *Body* Ride upon the *Carriage*, or *Carriage* ride upon the *Body*: To know which of them it is that Rides, or is extuberant, he uses the *Liner*; applying it to both the Places, as well of the *Body* as the *Carriage*: where he sees they have Rub'd or bore upon one another: And which of them that is extuberant, the Edge of the *Liner* will shew, by Riding upon it: And that part he Files upon with a small flat and very fine *File*, by little and little, taking off the extuberancy, till the *Bodies* and *Carriages* lie exactly flat upon, and close to one another: Which if they do not, the *Mold* will be sure to Rag.

§. XVII. ¶ I. *Of Sinking the Punches into the Matrices.*

**T**hat the *Matrice*, and all its parts may be the better understood, as I shall have Occasion to Name them, I have given you a *Draft* of the *Matrice* in Plate, 18 at E. and shall here explain its parts.

E The *Matrice*, wherein is Punched E, the *Face* of the *Letter*.

a The *Bottom* of the *Matrice*.

b The *Top* of the *Matrice*.

X 2

c The

*c* The Right Side of the *Matrice*.

*d* The Left Side of the *Matrice*.

*fg* The Face of the *Matrice*.

*hi* The Leather Groove of the *Matrice*.

In the *Back* or *Side* behind the *Matrice*, just behind *E* is filed in athwart the *Back*, from the right to the left Side a *Notch*, to settle and hold the point of the *Spring* or *Wyer* of the *Mold* in, that the *Matrice* fly or start not back when it is at Work.

As I told you (in §. 11. ¶ 1.) that the *Punches* are to be made of several Thicknesses, for reasons there shewed; and that therefore the *Letter-Cutter* makes *Wooden Patterns* for his several Sizes of Thicknesses as well as Heights; so now I am come to the *Sinking* of the *Punches* into the *Matrices*, I must tell you again that the *Letter-Cutter* or else the *Founder*, (either of which that *Sinks* them; for sometimes it is a Task Incumbent on each of them) considers the Thicknesses of all the *Punches* he has to *Sink*, though Height he need not consider in *Sinking* the *Matrices*: For the *Matrices*, by reason of their length in *Copper* upwards and downwards, have Substance enough and to spare, for the longest Letters to be *Sunk* into them: Therefore I say, he only considers the several Thicknesses of all the *Punches*, and makes *Wooden Patterns* for them, marking with a Pen and Ink the number of each size, on the *Pattern* as before he did for the *Steel-Punches*: But the *Patterns* he made for the *Steel-Punches* will be too Thin for the *Copper Matrices*: Because the *Steel-Punches* by *Sinking* into the *Matrices*, stretch and force the Sides of the *Copper* out, and sometimes crack them for want of Substance

stance ; and at other times carry or force the Substance of the *Matrice* so low with their *Sholder* if the *Letter* be broad, that it creates a great Trouble to rub them *Flat*, (as it is called) because it is done upon the *Using-File*.

Therefore he makes *Wooden Patterns* for every of the former siz'd *Punches*, so thick or rather an n thicker at the least, then he made the *Wooden Patterns*, that the *Steel-Punches* were made to be *Forged* by, that there may be Substance enough on each-side the *Copper* to bear the dilating that the sinking of the *Punch* into it will make, because the *Counter-Punch-Letters* are Thicker by their *Stems* and *Footing* or *Topping* than the *Counter-Punches* made for them need be.

Therefore ( as before ) for three sizes of *Punches* to be *Counter-Puncht*, he made three several siz'd *Patterns* ; so now for the several siz'd *Punches* that are to be *Sunk* into *Matrices*, he makes three several siz'd *Patterns* of *Wood* for the *Copper-Smith* to draw out *Rods* of *Copper* of those several Sizes by, and each of them (as aforesaid) an n, and for the *Thick Letters* an m (at least) Thicker than the *Patterns* were made, for the *Steel-Punches* to be *Forged* to a size by.

In the *Forging* of these *Copper Rods*, he instructs the *Copper-Smith* to make Choice of the softest *Copper* he can get, that the *Steel-Punches* may run the less hazzard of breaking ; and sometimes (if too soft *Temper'd*) battering their *Stroaks*.

The *Rose Copper* is commonly accounted the softest:

But yet I have many times *Sunk Punches* indifferently into every sort of *Copper*. Nay, even cast *Copper*, which is generally accounted the Hardest: Because *Copper*, as well (as some other Mettals) Hardens with Melting.

These *Rods of Copper* are (as I told you in §. III. ¶ 1. to be Cut into small Lengths, each about an Inch and an half long, and a *Great-Primmer* or *Double-Pica* deep; and for great Bodied *Letters* a *Two-lin'd-English* deep; But their Thickness not assignable, because of the Different Thicknesses in *Letters*, both of the same and other *Bodies*, as in part I shewed, in §. II. and more fully in this present §. and ¶.

The reason why the *Copper-Rods* are Forg'd so deep, is, That the more substance of *Copper* may lie under the *Face* of the *Punch*: For if the *Rod* have not a convenient depth, the *Face* of the *Punch* in *Sinking*, does the sooner ingage with the Hardness of the *Face* of the *Stake* it is *Sunk* upon: And having with a few Blows of the *Hammer*, soon hardned the *Copper* just under the *Face* of the *Punch*, as well the hardness of the small (thus hardned) *Body* of *Copper* just under the *Face* of the *Punch*, as the Hardness of the *Face* of the *Stake* contribute a complicated assistance to the breaking or battering the *Face* of the *Punch*. But if the *Rod* be deep, the Substance of *Copper* between the *Face* of the *Punch* and the *Stake* is less hardned, and consequently the *Punch* will *Sink* the easier, and deeper with less Violence.

But

But sometimes it has happ'ned that for the *Sinking* one *Matrice* or two, I have been loath to trouble my self to go to the *Copper-Smiths*, to get one *Forg'd*: and therefore I have made shift with such *Copper* as I have had by me. But when it has not been so deep as I could have wisht it, I have just entered the *Punch* into the *Matrice* upon the *Stake*, and to *Sink* it deep enough, I have laid it upon a good thick piece of *Lead*, which by reason of its softness has not hardned the *Copper* just under the *Face* of the *Punch*; but suffered the *Punch* to do its *Office* with good Success.

Having cut the *Copper-Rods*, into fit Lengths with a Cold *Chissel*, He files the end that is to stand upon the *Stool* of the *Mold* exactly square, and the Right-side of the *Matrice*, that stands against the *Carriage* and *Body*, also exactly Square and smooth upon the *Ussing-File*. Then he places the filed end, or *Bottom* upon the *Stool*, with the *Face* of the *Matrice* towards the *Carriage* and *Body*, and the Right side of the *Matrice*, close against the *Register*: Then if the *Punch* to be sunck be an ascending Letter. He with a fine pointed *Needle*, makes a small Race by the upper side of the *Carriage* upon the *Face* of the *Matrice*, and that Race is a mark for him, to set the top of the *Ascending Letter* at, when he *Sinks* it into the *Matrice*: So that then placing the *Punch* upright upon the middle of the Thickness of the *Matrice*, the *Matrice* lying solid on the *Stake*: He with the *Face* of an *Hammer* sizable to the bigness of his *Punch*, cautiously knocks upon the *Hammer-end* of the *Punch*, with reiterated Blows, till he



he have driven the *Punch* deep enough into the *Matrice*.

But if it be a short *Letter*, or a Descending *Letter*, and not Ascending also: Then he elects any *Cast-Letter* of the Thickness of the *Beard*, (as *Founders* and *Printers* call it) For which Explanation see the Table, and he lays that *Letter* upon the *Surface* of the *Carriage*, and then placing the *Bottom* of the *Matrice* to be *Sunk* as before, on the *Stool*, and against the *Register*, He draws with a *Needle* as before, a race above the *Surface* of that *Letter*, against the *Face* of the *Matrice*, and that race is a Mark for him to place the *Head* of the *Letter* by. Then managing the *Punch* and *Hammer* as before was shewed, he *Sinks* the *Punch* into the *Matrice*.

But here arises a Question, *viz.* How deep the *Punches* are to be *Sunk* into the *Matrices*? The Answer is, a Thick *Space* deep, though deeper even to an *n* would be yet better: Because the deeper the *Punches* are *Sunk*, the lower does the *Beards* stand below the *Face*, and those *Beards* when the *Cast Letter* comes into the *Printers* Hands to be used, are the less subject to *Print*, as too oft they do both at *Head* or *Foot* of a *Page*, than when they lie so high that the softness of the *Blankets*, and Hardness of a *Pull*, or else carelessness of Running the *Carriage* of the *Press* to a considered Mark they would be. But they are seldom *Sunk* any deeper than a thick *Space*: and the reason is, because the breaking or battering the *Face* of the *Punch* should not be to much hazarded.

The

The many *Punches* to be *Sunk* into *Matrices* for the same *Body*, are difficult to be *Sunk* of an equal depth. Therefore I always make a *Beard-Gage*, as is described in *Plate 19* at *F*, where *a b* is a *Sholder* that rests upon the *Face* of the *Matrice*, *c* is the *Point* or *Gage* that measures the depth of the *Sunken Punch*. So that when the *Point c* just touches the *Bottom*, and both the *Sholders a b* the *Face* of the *Matrice*, the *Punch* may be accounted well *Sunk* as to depth.

But though it be accounted well *Sunk* for a first Essay, yet can it not be reasonably imagined it is well *Sunk* for good and all; as well because in *Sinking* the *Punches* it has carryed some part of the *Surface* of the *Matrice* down below the *Face* of the *Matrice* into the *Body* of the *Copper*, as because both the *Sides* are doubtless extorted, and one *Side* or *Part* of the *Punch* *Sunk* more or less deeper than the other. Wherefore I now come to

## ¶ 2. *Justifying the Matrices.*

*Justifying* of *Matrices* is, 1. to make the *Face* of the *Sunken Letter*, lie an exact designed depth below the *Face* of the *Matrice*, and on all its sides equally deep from the *Face* of the *Matrice*. 2. It is to set or *Justifie* the *Foot-line* of the *Letter* exactly in *Line*. 3. It is to *Justifie* both the sides, viz. the *Right* and *left-sides* of a *Matrice* to an exact thickness.

Therefore to proceed Methodically, he first slightly Files down the *Bunchings* out that the *Punch*  
Y
made

made in the Sides of the *Matrice* ; And then slightly Files down all the *Copper*, on the *Face* of the *Matrice*, till the Hollow the *Punch* made becomes even with the whole *Face* of the *Matrice*.

Then he *Cast*s a *Proof-Letter* or two, and *Rubs* them : And with the Edge of a Knife cuts out what may remain in the bottom of the *Shanck* by reason of the un-even breaking, off of the *Break* that the square bottom of the *Shanck* may not be born off the *Bottom-Ledge* of the *Lining-Stick*.

But having till now said nothing of the *Lining-Stick*, it is proper before I proceed, to give a Description of it : It is delineated in *Plate 19* at *G*. Where *G* is the *Plain*, *a* the *Side-Ledge*, *b* the *Bottom-Ledge*, *c* the *Stilt*, all made of *Brass*.

The *Plain* is exactly Flat, Straight, and Smooth, that the *Shancks* of the *Letter* being likewise so, may lie flat and solidly on it. Its depth between the *Bottom-Ledge*, and the fore edge is about the length of the *Shanck* of the *Letter* : But the whole *Plain* of *Brass* is yet deeper ; Because the *Bottom-Ledge* is fastened on it. The *Lining-Stick* is about two *Inches* long for small Letters ; but longer for *Big-Bodied Letters*.

Both *Bottom* and *Side-Ledge*, is a thin piece of *Brass*, from a *Scaboard* to a *Pica* thick, according as the *Body* whose *Face* and *Foot-line* is to be *Justified* in it is bigger or less. These two *Ledges* is an *Inside Square* exactly wrought, and with small *Rivets* fastened on the *Side* edge, and on the *Bottom* edge.

The

The *Stilt* is a thin flat piece of *Brass-Plate* about a *Scaboard* thick, and a *Double-Pica* broad: One of its edges is *Soldered* to the under-side of the *Plain*, about a *Double-Pica* within the fore-edge of the *Plain*, that the *Lining-Stick* (when set by with *Proof-Letters* in it) may not lie flat on its *Bottom*; but have its fore edge *Tilted* up, that the *Letters* in it may rest against the *Bottom-Ledge*.

Having cut the *Notch* in the *Break* of the *Letters* as aforesaid, He *Rubs* every side of them on the *Stone*, with two or three hard *Rubs*, to take off the small *Rags* that may happen on the *Shanck* of the *Letter*, notwithstanding the *Mold* is imagined to be very truly made and *Justified*.

The *Stone* is commonly a whole *Grind-Stone*, about eighteen Inches diameter, having both its sides truly *Rub'd* flat and smooth, by *Jostling* it (as *Masons* call it) upon another broad long and flat *Stone* with *Sand* and *Water*. It must have a fine, but very sharp *Greet*. Now to return.

He places a *Quadrat* of the same *Body*, on the *Plain* of the *Lining-stick*, and against the *Side-Ledge* of it He sets up three or four old *m's* of the same *Body*: Then sets up his *Proof-Letter* or *Letters*, and after his *Proof-Letter* three or four old *m's* more of the same *Body*; and being very careful that the *Foot* of the *Shanck* of the *Letter* stands full down against the *Bottom-Ledge* of the *Lining-stick*, He applies the edge of the *Liner* to the *Faces* of all these *Letters*: And if he finds that the edge of the *Liner* just touch (and no more) as well all the parts of his *Proof-Let-*

ters as they do upon his old *Letters*, He concludes his *Matrice* is *Sunk* to a true *Height against Paper*.

But he seldom hopes for so good luck ; but does more likely expect the *Matrice* is *Sunk* too deep or too shallow, and awry on the right and left-side, or on the top or bottom of the *Line*, for all or any of these Faults the *Liner* will easily discover. Therefore I shall shew you how he *Justifies* a *Matrice* that is too *High against Paper*.

We will suppose the *Face* of the *Punch* is *Sunk* flat and straight down into the *Matrice* ; but yet it is a little too deep *Sunk*. Therefore he considers how much it is too deep: If it be but a little too deep, perhaps when the *Face* of the *Matrice* shall be made exactly flat (for yet it is but *Rough-Filed*) it may be wrought down to be just of an *Height against Paper*. But if the *Punch* be *Sunk* so much too deep that the smoothing the flat of the *Face* on the *Using-File* will not work it low enough ; then with a *Bastard-cut flat-File*, he takes off (according to his Discretion) so much *Copper* from the *Face* of the *Matrice* as will make it so much nearer as he thinks it wants to the *Face* of the *Letter*. But yet considers that the *Face* of the *Matrice* is yet to smoothen on the *Using-File*, and therefore he is careful not to take too much off the *Face* of the *Matrice* with the *Rough-File*.

He is also very careful that when he is to *File* upon the *Face* of the *Matrice*, to *Screw* the *Face* of it Horizontally flat in the *Vice* : And that in *Filing* upon it, he keeps his *File* directly Horizontal, as  
was



was shewed, *Numb. 1. Fol. 15, 16. Vol. 1.* For if he let his right or left-Hand dip, the *File* will in its Natural Progress take too much off the side it dips upon, and consequently the *Face* of the Letter on that side will lie shallower from the *Face* of the *Matrice* then it will on the opposite side. The like caution he makes, in *Filing* between the *Top* and *Bottom* of the *Matrice* on the *Face*. For if he *Files* away too much *Copper* toward the *Top* or *Bottom*, the *Face* of the *Letter* on its *Top* or *Bottom-Line*, will lie on that end shallower from the *Face* of the *Matrice*.

Then he considers by his *Proof-Letters* how much too thick the right or left side of the *Matrice* is.

I told you in § II. ¶ 4. that the Angle the *Sholder* made with the *Face* of the *Letter*, is about 100 Degrees, which is 10 Degrees more then a *right Angle* or *Square*. So that if a *Letter* be *Cast* and *Rub'd* just so thick that the *Liner* when applied to the *Shanck* of the *Letter* reaches just to the *Sholder*, there will be an *Angle* of 10 Degrees, contained between the edge of the *Liner* and the *Straight Line* that proceeds from the *Sholder* at the *Shanck*, to the outer-edge of the *Face* of the *Letter*. And if two *Letters* be thus *Cast* and *Rub'd* and *Set* together, the *Angle* contained between their *Shancks*, and the outer-edge of the *Face* of the *Letter* will be 20 Degrees, which is too wide by half for the *Faces* of two *Letters* to stand assunder. Therefore the sides of the *Matrice* must be so *Justified*, that when the *Shancks* of two *Letters* stand close together, the *Angle* be-

tween both the *Shancks*, and the adjacent outer-edges of the *Faces* of the *Letters* may both make an *Angle* of about 10 Degrees as aforesaid, which is a convenient distance for two *Letters* to stand assunder at the *Face*. But to do which, If the right-side be too thick, the *Register* of the under-half of the *Mold*, being (as I said) hard screw'd, so as to stand about an n off the edge of the *Body* towards the right hand; He places the *Foot* of the *Matrice* on the *Stool*, and the right-side of the *Matrice* close against the *Register*, and observes how much too thick that side of the *Matrice* is: For so much as the right-hand edge of the *Orifice* of the *Matrice* stands on the left hand side of the *Body*, so much is the right side of the *Matrice* too thick, and must by several offers be *Filed* away with a *Bastard-Cut-File*, not all at once, least (ere he be aware) he makes that side of the *Matrice* too thin, which will be a great damage to the *Matrice*, and cannot be mended but with a *Botch*, as shall in proper place be shewed.

Having by several proffers wrought the right-side of the *Matrice* thus near its thickness, he proceeds to *Justifie* the left-side also. But this side must be *Justified* by the upper half of the *Mold*; By turning the top of the *Matrice* downwards, and placing the left-side of it (now the right-side) against the *Register*, and works away the left-side in all respects as he did the right-side; still being very cautious he takes not to much *Copper* away at once.

To *Justifie* the *Letter* in *Line* he examines the *Proof-Letter* (yet standing in the *Lining-Stick*) and applies the

the *Liner* to the *Foot-line* : And if the *Liner* touch all the way upon the *Foot-line* of the *Proof-Letter* and the *Foot-Line* of all the old m's, that *Matrice* is *Justified* in *Line*. But this also very rarely happens at first, for by design it is generally made to stand too low in *Line* : Because the *Bottom* of the *Matrice* may by several proffers be *Filed* away till the *Letter* stand exactly in *Line*. But should he take too much off the *Bottom* of the *Matrice*, it cannot be made to stand lower without another *Botch*.

Nor does he reckon that this first Operation, or perhaps several more such, shall *Justifie* the *Matrice* in *Line*. But after bringing both the sides of the *Matrice* thus near, and also bringing the *Matrice* thus near in *Line*. He *Cast*s another *Proof-Letter* or two, and *Rubbing* all the sides of their *Shancks*, as before was shew'd, he tries by *Rubbing* the *Letters* how near he has brought the thickness of both the sides : For when the sides of the *Matrice* are brought just to such a thickness, that the *Shanck* of the *Letter* (Cast in the *Mold*) *Rubs* flat half way up beyond the *Beard* towards the *Face* of the *Letter*, the *Matrice* is of a convenient thickness, and there the *Angle* from the *Beard* of the *Shanck*, to the outer-edge of two *Letters* set together, will make an *Angle* of about 10 degrees as aforesaid, which being about one third part of a *thin-Space* is a convenient distance for the adjacent edges of two *Letters* to stand assunder : But yet *Fonnders* sometimes to *Get in* or *Drive out*, *Cast* the *Letters* thinner or thicker, and consequently their *Faces* stand closer or wider assunder

der, which is unseemly when the *Letter* comes to be *Printed*.

Then he sets the *Proof-Letters* in the *Lining-Stick*, between four or five old m's as before, and with the *Liner* examines again how well these *Proof-Letters* stand in *Line* with the old m's, which if they do not, he Reiterates the former Operations so oft, till the sides and *Line* of the *Matrice* is *Justified*, and at every Operation *Casts* new *Proof-Letters* to examine the thickness of both the Sides, and how well the *Matrice* is *Justified* to *Stand in Line*.

The *Matrice* being now *Justified*, he *Files* a *Leather-Groove* round about it, viz a *Notch* (made properst with a three square *File*) within about a thick *Scaboard* of the top of the *Matrice*, to tie the *Leather* fast to.

He also *Files* another *Notch* in the back-side of the *Matrice* athwart it, to rest the point of the *Wyer* or *Spring* in. But this *Notch* must by no means be made before the *Matrice* be *Justified* to its true *Height* against *Paper*: Because when this *Notch* is made, the *Punch* cannot again be struck in the *Matrice*; For that the *Matrice* will not lie solid on the *Stake* in that place.

¶ 3. *Of Botching-Matrices, to make them  
serve the better.*

*Matrices* are sometimes either through a careless, or sometimes through an unlucky stroak or two of the *File* made too thin. And sometimes the *Foot* of the *Matrice* is too much taken away, and the *Letter* by that

that means stands too high in *Line* : And sometimes the *Face* of the *Matrices* is too much taken away; So that the Letter will not stand *High enough against Paper*.

To remedy all or any part of these inconveniences, *Founders* are forced to make *Botches* on the *Matrice*: As first, If the *Matrice* be too thin on the right or left side, or both; They prick up that side, by laying the *Matrice* flat on the *Work-Bench*, with the thin side upwards, and holding the point of a *Punch-Graver* aslope upon the thin side, with an *Hammer* drive the point into the thin side of the *Matrice*, and so raise a *Bur* upon that side; which *Bur* (though it thicken not the *Matrice*, yet it) makes the side of the *Matrice* stand off the *Register*, and consequently is equivalent to thickning it.

The higher this *Bur* is raised, the better is the *Matrice Botcht*; because the thin fine points thus raised (if not pretty well flatted into the Substance of the *Bur*) will quickly either wear off by the pressure of the *Register* against them, or else flatten into the *Body* of the *Bur*, and both ways makes the *Matrice* again too thin.

Sometimes they do not *Botch* the *Matrice* thus for this fault; but only Paste a piece of Paper, or a Card, (according as it may want thickness) against the thin side of the *Matrice* and so thicken it.

But to mend the sides I use another Expedient, *viz.* by Soldering a piece of *Plate-Brass* against its thin side or sides, which is much better than *Botching* it.



*Secondly*, If the *Matrice* be filed away too much at the *Foot*, they knock it up with the *Pen* of the *Hammer*; and stretch it between the *Foot* and the *Orifice* of the *Matrise*, and then *Justife* it again in *Line*. Or a piece may be *Soldered* under the *Foot*.

*Thirdly*, If the *Face* of the *Matrice* be too much taken away, and either the *Punch* spoiled or the *Notch* in the back of the *Matrice* made so, as it cannot be *Sunken* deeper, they raise a *Bur* on the *Face*, as they did on the thin sides, to keep the *Matrice* off the *Carriages* and *Bodies* which Lengthens the height of the Letter *against Paper* so much as is the height of the raised *Bur*. But of all the *Botches* this is the worst, because the *Beard* lies now nearer the *Face*: And the hollow standing off of the *Face* of the *Matrice* from the *Carriages* and *Bodies*, subjects the *Mettal* to run between them, and so pesters the *Workman* to get the Letter out of the *Mold* and *Matrice*.

#### Sect. XVIII, Of setting up the Furnance:

**H**AVING *Justified* the *Mold* and *Matrice*, we come now to *Casting of Letters*: But yet we have nelther *Furnance*, *Mettal*, or *Ladle*. Wherefore it is the *Founders* care, first to provide these.

The *Furnance* I have described in *Plate 20*. It is built of *Brick* upright, with four *Square* sides and a *Stone* on the top, in which *Stone* is a wide round hole for the *Pan* to stand in.

a b c d The

*a b c d* The Square Stone at the top, covering the whole *Furnance*. This is indeed the *Furnance*.

*a d, b c* The breadth two Foot and one Inch.

*a b, c d* The Length two Foot three Inches. Into the Breadth and Length about the whole Stone, is let in even with the top of the Stone a square *Iron Band* two Inches deep, and a quarter and half quarter of an Inch thick to preserve the Edges of the Stone from battering.

*e* The round hole the *Pan* stands in, which hath an *Iron Plate* let into it eight Inches diameter, an Inch and half broad and one quarter of an Inch thick.

This *Iron-Plate* fits the *inside* of the *Hole* so far as it is Circular, and consequently is a *Segment* of a *Circle*. But where the *Smoak-vent* breaks off the Circularity of the Stone, there ends this Plate of *Iron*, that the *Smoak* may have the freer vent. Its Office also is to preserve the Edge of the *Hole* from battering, with the oft taking out and putting in the *Iron Pan*.

*f* The *Funnel* seven Inches high, and five Inches wide.

*g* The *Stoke-Hole* four Inches wide, and six Inches long.

*h h* The height of the *Furnance* two Foot ten Inches.

*i* The *Air-Hole* just underneath the *Hearth* to let in Air that the Fire may burn the freer.

*k* The *Ash-Hole* where the Ashes that fall from the *Hearth* are taken away.

*l m n o* The *Bench* two Foot broad, three Foot long, and two Foot eight Inches high. The *Bench* is to empty the Letters out of the *Mold* upon, as the *Founder* Casts them.

The *Hearth* lies seven Inches below the top of the round *Hole*, and hath under it another round *Iron-Ring* of the same demenſions with the first, on which straight *Iron-Bars* are fastened that the *Fire* is laid on.

In the round *Iron-Ring* (or rather Segment) on the top of the *Furnance* is set the *Pan*, which is either a *Plate Ladle*, or a small *Cast-Iron Kettle* that sinks into it within two Inches of the *Brim* of the *Pan*.

## ¶ 2. Of making Mettal.

The *Mettal Founders* make *Printing Letters* of, is *Lead* hardned with *Iron*: Thus they chuse *stub-Nails* for the best *Iron* to Melt, as well because they are assured *stub-Nails* are made of good soft and tough *Iron*, as because (they being in small pieces of *Iron*) will Melt the sooner.

To make the *Iron Run*, they mingle an equal weight of *Antimony* (beaten in an *Iron-Morter* into small pieces) and *stub-Nails* together. And preparing so many Earthen forty or fifty pounds *Melt-ing-Pots* (made for that purpose to endure the *Fire*) as they intend to use: They *Charge* these *Pots* with the mingled *Iron* and *Antimony* as full as they will hold.

Every

Every time they Melt *Mettal*, they build a new *Furnance* to melt it in : This *Furnance* is called an *Open Furnance* ; because the Air blows in through all its sides to Fan the *Fire*: They make it of Bricks in a broad open place, as well because the Air may have free access to all its sides, as that the Vapours of the *Antimony* ( which are Obnoxious ) may the less offend those that officiate at the *Making* the *Mettal* : And also because the Violent Fire made in the *Furnance* should not endanger the Firing any adjacent Houses.

They consider before they make the *Furnance* how many *Pots* of *Mettal* they intend to Melt, and make the *Furnance* sizable to that number : We will suppose *five Pots*. Therefore they first make a Circle on the Ground capable to hold these five *Pots*, and wider yet by three or four Inches round about : Then within this Circle they lay a Course of Bricks close to one another to fill the Plain of that Platform, with their broad or flat sides downwards, and their ends all one way, and on this Course of Bricks they lay another Course of Bricks as before, only the Lengths of this Course of Bricks lies athwart the Breadths of the other Course of Bricks : Then they lay a third Course of Bricks with their lengths cross the Breadth of the second Course of Bricks.

Having thus raised a Platform, they place these five *Pots* in the middle of it close to one another, and then on the Foundation or Plat-form raise the *Furnance* round about by laying the Bricks of the first *Lay* end to end and flat, close to one another :

On the second *Lay*, they place the middle of a Brick over a *Joynt* ( as *Brick-layers* call it ) that is where the ends of two Bricks joyn together, and so again lay Bricks end to end till they *Trim* round the *Platform*. Then they lay a third *Lay* of Bricks, covering the *Joynts* of the second *Lay* of Bricks as before : So is the Foundation finisht.

Then they raise the Walls to the *Furnance* on this Foundation ; But do not lay the ends of their Bricks close together. But lay the ends of each Brick about three Inches off each other, to serve for *Wind-holes* till they *Trim* round about : Then they lay another *Lay* of Briks leaving other such *Wind-holes* over the middle of the last *Lay* of Bricks, and so *Trim* as they work round either with half Bricks or Bats that the *Wind-holes* of the last *Lay* may be covered : And in this manner and order they lay so many *Lays* till the Walls of the *Furnance* be raised about three Bricks higher than the *Months* of the *Melting-Pots*, still observing to leave such *Wind-holes* over the middle of every Brick that lies under each *Lay*.

Then they fill the sides of the *Furnance* round about the *Melting-Pots*, and over them with *Char-coal*, and *Fire* it at several *Wind-holes* in the bottom till it burn up and all over the *Furnance*, which a moderate Wind in about an Hours time will do : And about half an Hours time after they lay their Ears near the Ground and listen to hear a *Bubling* in the *Pots* ; and this they do so often till they do hear it. When they hear this *Bubling*, they conclude the *Iron* is melted : But yet they will let it stand, perhaps half an hour longer or more, according as they guess the



the Fire to be Hotter or Cooler, that they may be the more assured it is all throughly Melted. And when it is Melted the Melting *Pot* will not be a quarter full.

And in or against that time they make another small *Furnance* close to the first, ( to set an *Iron Pot* in, in which they Melt *Lead* ) on that side from whence the Wind blows ; Because the Person that Lades the *Lead* out of the *Iron-Pot* (as shall be shewed by and by ) may be the less annoyed with the Fumes of the *Mettal*, in both *Furnances*. This *Furnance* is made of three or four *Course* of Bricks open to the windward, and wide enough to contain the designed *Iron Pot*, with room between it and the sides to hold a convenient quantity of *Charcoal* under it, and about it.

Into this *Iron-Pot* they put for every three Pound of *Iron*, about five and twenty pounds of *Lead*. And setting Fire to the *Coals* in this little *Furnance* they Melt and Heat this *Lead* Red-hot.

Hitherto a Man ( nay, a Boy ) might officiate all this Work ; But now comes Labour would make *Hercules* sweat. Now they fall to pulling down so much of the side of the open *Furnance* as stands above the Mouth of that *Melting-Pot* next the *Iron-Pot*, And having a thick strong *Iron Ladle*, whose *Handle* is about two Yards long, and the *Ladle* big enough to hold about ten Pounds of *Lead*, and this *Ladle* Red-hot that it chill not the *Mettal*, they now I say with this *Ladle* fall to clearing this first *Melting-Pot* of all the *Coals* or filth that lie on the top of the Melted *Mettal*: while another Man at the same time stand

stands provided with a long strong round *Iron Stirring Poot*, the *Handle* of which *Stirring Poot* is also about two Yards long or more, and the *Poot* it self almost twice the length of the depth of the *Melting Pot*. This *Poot* is nothing but a piece of the same *Iron* turned to a square with the *Handle*: And this *Poot* is also in a readiness heated Red-hot.

Now one Man with the *Ladle Lades* the *Lead* out of the *Iron-Pot* into the *Melting Pot*, while the other Man with the *Poot* stirs and Labours the *Lead* and *Mettal* in the *Melting Pot* together till they think the *Lead* and *Mettal* in the *Melting Pot* be well incorporated: And thus they continue *Lading* and *Stirring* till they have near filled the *Melting Pot*.

Then they go to another next *Melting-Pot*, and successively to all, and Lade and stir *Lead* into them as they did into the first. Which done the *Mettal* is made: And they pull down the *Walls* of the *Open Furnance*, and rake away the Fire that the *Mettal* may cool in the *Pots*.

Now (according to Custom) is Half a Pint of Sack mingled with Sallad Oyl, provided for each Workman to Drink; intended for an Antidote against the Poysonous Fumes of the *Antimony*, and to restore the Spirits that so Violent a Fire and Hard Labour may have exhausted.

### ¶ 3. Of Letter-Ladles.

*Letter-Ladles* differ nothing from other common *Ladles*, save in the size: Yet I have given you a Draft of one in Plate 20 at A. Of these the *Caster* has many at Hand, and many of several sizes that he may successively chuse one to fit the several sizes of *Letters* he has to *Cast*; as well in *Bodies* as in *Thicknesses*.

§ XIX. ¶ 1. Of Casting, Breaking, Rubbing, Kerning, and setting up of Letters.

BEfore the *Caster* begins to *Cast* he must kindle his *Fire* in the *Furnance*, to *Melt* the *Mettal* in the *Pan*. Therefore he takes the *Pan* out of the Hole in the Stone, and there lays in *Coals* and kindles them. And when it is well kindled, he sets the *Pan* in again, and puts *Mettal* into it to *Melt*. If it be a small *Bodied-Letter* he *Casts*, or a thin *Letter* of Great *Bodies*, his *Mettal* must be very hot; nay, sometimes Red-hot to make the *Letter Come*. Then having chose a *Ladle* that will hold about so much as the *Letter* and *Break* is, he lays it at the *Stoking-hole*, where the *Flame* bursts out to heat. Then he ties a thin *Leather* cut into such a *Figure* as is described in Plate 20 at B with its narrow end against the *Face* to the *Leather-Groove* of the *Matrice*, by whipping a *Brown Thred* twice about the *Leather-Groove*, and fastning the *Thred* with a *Knot*. Then he puts both *Halves* of the *Mold* together, and puts

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the *Matrice* into the *Matrice Cheek*, and places the *Foot* of the *Matrice* on the *Stool* of the *Mold*, and the broad end of the *Leather* upon the *Wood* of the upper half of the *Mold*, but not tight up, lest it might hinder the *Foot* of the *Matrice* from *Sinking* close down upon the *Stool* in a train of Work. Then laying a little *Rosin* on the upper *Wood* of the *Mold*, and having his *Casting Ladle* hot, he with the boiling side of it Melts the *Rosin*; And when it is yet *Melted* presses the broad end of the *Leather* hard down on the *Wood*, and so fastens it to the *Wood*. All this is Preparation.

Now he comes to *Casting*. Wherefore placing the under-half of the *Mold* in his left hand, with the *Hook* or *Hag* forward, he clutches the ends of its *Wood* between the lower part of the *Ball* of his Thumb and his three hind-Fingers. Then he lays the upper half of the *Mold* upon the under half, so as the *Male-Gages* may fall into the *Female-Gages*, and at the same time the *Foot* of the *Matrice* place it self upon the *Stool*. And clasping his left-hand Thumb strong over the upper half of the *Mold*, he nimbly catches hold of the *Bow* or *Spring* with his right-hand Fingers at the top of it, and his Thumb under it, and places the point of it against the middle of the *Notch* in the backside of the *Matrice*, pressing it as well forwards towards the *Mold*, as downwards by the *Sholder* of the *Notch* close upon the *Stool*, while at the same time with his hinder-Fingers as aforesaid, he draws the under-half of the *Mold* towards the *Ball* of his Thumb, and thrusts by the *Ball* of his Thumb the upper part towards his Fingers,

gers, that both the *Registers* of the *Mold* may press against both sides of the *Matrice*, and his Thumb and Fingers press both Halves of the *Mold* close together.

Then he takes the Handle of his *Ladle* in his right Hand, and with the *Boll* of it gives a stroak two or three outwards upon the *Surface* of the *Melted Mettal* to scum or cleer it from the Film or Dust that may swim upon it. Then takes up the *Ladle* full of *Mettal*, and having his *Mold* as aforesaid in his left hand, he a little twists the left-side of his *Body* from the *Furnance*, and brings the *Geat* of his *Ladle* (full of *Mettal*) to the *Mouth* of the *Mold*, and twists the upper part of his right-hand towards him to turn the *Mettal* into it, while at the same moment of Time he Jilts the *Mold* in his left hand forwards to receive the *Mettal* with a strong *Shake* (as it is call'd) not only into the *Bodies* of the *Mold*, but while the *Mettal* is yet hot, running swift and strongly into the very *Face* of the *Matrice* to receive its perfect Form there, as well as in the *Shanck*.

Then he takes the upper half of the *Mold* off the under half, by placing his right-Hand Thumb on the end of the *Wood* next his left-Hand Thumb, and his two middle Fingers at the other end of the *Wood*, and finding the Letter and *Break* lie in the under-Half of the *Mold* (as most commonly by reason of its weight it does) he throws or tosses the Letter *Break* and all upon a Sheet of Waste Paper laid for that purpose on the *Bench* just a little beyond his left-hand, and is then ready to *Cast* another Letter as be-



fore, and also the whole number that is to be *Cast* with that *Matrice*.

But sometimes it happens that by a *Shake*, or too big a *Ladle*, the *Mettal* may spill or slabber over the *Mouth* of the upper Half of the *Mold*, so that the spilt *Mettal* sticking about the out-sides of the *Mouth*, may lift the Letter off the under half of the *Mold*, and keep it in the upper half. Therefore he with the point of the *Hag* in the Wood of the under half of the *Mold*, picks at the hollow in the fore part of the *Break* made by the *Shaking* out of the *Mettal*, and draws *Break* and *Letter* both out. It sometimes sticks in the under Half of the *Mold* by the same cause, and then he uses the point of the *Hag* in the upper half of the *Mold*, to pick or hale it out, as before.

It also sometimes sticks when any of the Joynts of the *Mold* open never so little, the *Mettal* thus getting in between those Joynts : But this fault is not to be indured, for before he can *Cast* any more, this fault must be mended.

But besides *Letters*, there is to be *Cast* for a perfect *Fount* (properly a *Fund*) *Spaces* Thick and Thin, n *Quadrats*, m *Quadrats* and *Quadrats*. These are not *Cast* with *Matrices* but with *Stops* ( as we may call them ) Because when these are *Cast* they are all shorter than the *Shanck* of the Letter, that they may not *Print*. Therefore they take off the *Register* of the under-Half *Mold*, and fit a piece of *Plate-Brass* about a *Brevier* Thick and a *Brevier* longer than to reach to the edge of the *Body* in the place of the *Register*, and drill a hole in this *Plate-Brass* right against the

the Hole in the *Carriage* that the *Female-Screw* lies in : This Hole is made so wide that the *Male-Screw* which screwed the *Register* close to the *Carriage* and *Body* may enter in at it, and screw this *Plate-Brass* close to them, as it did the *Register* : Then they make a mark with the point of a *Needle* on the *Plate-Brass* just against the side of the Edge of the *Body*, and at this mark they double down the end of the *Plate-Brass* inwards to make a perfect *Square* with the inside of the whole *Plate*. This doubling down is called the *Stop* aforesaid, and must be made just so thick as they design the Thin or Thick *Space* to be, and must have its Upper and Under-Edges filed so exactly to the *Body*, that it may lie close upon the Under-*Carriage*, and just even so high as the upper-side of the *Body*. So that when the Upper-half of the *Mold* is placed on the under-Half, and *Mettal* Cast in at the *Mouth* (as before) the *Mettal* shall descend no deeper between the two *Bodies* then just to his *Stop* : You must note that this *Stop* must be filed exactly true as to *Body* and *Thickness* : For if it be never so little too big in *Body*, the *Carriage* of the *Mold* will ride upon it and make the *Body* of the *Space* bigger. Or if the *Body* be never so little too little, the Hot *Mettal* will run beyond the *Stop* ; both which Mis-carriages in making the *Stop*, spoil the *Space*.

If the *Space* be too short, they File the end of the *Stop* shorter.

This *Brevier* thick *Plate* will be thick enough for *Stops* for the Thin or Thick *Spaces* of any *Body* though of *Great-Cannon*, and for the *Quadrat Stop*

of any Body under a *Great Primmer*. And for the *m* *Quadrat Stop* of all to a *Brevier* and all Bodies under it. But for *Stops* that require to be Thicker then a *Brevier*, instead of doubling the *Stop* inwards on the *Plate*, I *Solder* on the in-side of that end of the *Plate* a *Stop* full big enough in Body, and big enough in Thickness for the *Quadrat* I intend to make, and afterwards file and fit the *Stop* exactly as before.

When they *Cast* these *Spaces* or *Quadrats*, this *Stop* is always screwed fast upon the *Carriage* of the under-Half *Mold* as aforesaid. So that they only fit the upper half *Mold* on the under, and *Cast* their Number almost twice as quick as they do the Letters in *Matrices*.

It is generally observed by *Work-men* as a Rule, That when they *Cast Quadrats* they *Cast* them exactly to the Thickness of a set Number of *m's* or *Body*, viz. two *m's* thick, three *m's* thick, four *m's* thick, &c. And therefore the *Stops* aforesaid must all be filed exactly to their several intended thicknesses, The reason is, that when the *Compositer* Indents any Number of Lines, he may have *Quadrats* so exactly *Cast* that he shall not need to *Justifie* them either with *Spaces* or other helps.

¶ 2. *Some Rules and Circumstances to be observed in Casting.*

1. If the Letter be a small *Body*, it requires a Harder *Shake* than a great *Body* does: Or if it be a thin Letter though of a greater *Body*, especially  
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small *i*, being a thin Letter its Tittle will hardly Come ; So that sometimes the *Caster* is forced to put a little *Block-Tin* into his Mettal, which makes the Mettal Thinner, and consequently have a freer flux to the Face of the *Matrice*.

2. He often examines the *Registers* of the *Mold*, by often *Rubbing* a *Cast* Letter : For notwithstanding the *Registers* were carefully *Justified* before, and hard screwed up ; yet the constant thrusting of both *Registers* against the sides of the *Matrice*, may and often do force them more or less to drive backwards. Or a fall of one half or both Halfs of the *Mold*, may drive them backwards or forwards : Therefore he examines, as I said, how they *Rub*, whether too Thick or too Thin. And if he see Cause, mends the *Registers*, as I shew'd § 5. ¶ 2.

Or if the *Matrice* be *Botcht*, as I shew'd you § 5. ¶ 3. then those *Botches* ( being only so many fine points rising out of the Body of the *Copper* of the *Matrice* ) may with so many reiterated pressures of the *Registers* against them, flatten more and more, and press towards the Body of the *Matrice*, and consequently make the Letter Thinner : Which if it do, this must be mended in the *Matrice* by re-raising it to its due Thickness.

3. He pretty often examines, as I shew'd in § 5. ¶ 2. how the Letters stand in *Line*: For when great Numbers are *Cast* with one *Matrice*, partly by pressing the point of the *Wyer* against the *Bottom-Shoulder* of the *Notch* in the back-side of the *Matrice*, and partly by the softness of the matter of his *Matrice* and hardness of the *Iron-stool*, the *Foot* of the *Matrice* (if  
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it wear not) may batter so much as to put the Letter out of Line. This must be mended with a *Botch*, viz. by knocking up the *Foot* of the *Matrice*, as I shew'd § 5. ¶ 3.

A Work-man will *Cast* about four thousand of these Letters ordinarily in one day.

### ¶ 3. Of Breaking off Letters.

*Breaking* off is commonly Boys-work : It is only to *Break* from the *Shanck* of the *Letter*. All the care in it is, that he take up the *Letter* by its Thickness, not its *Body* (unless its Thickness be equal to its *Body*) with the fore-Finger and Thumb of his right Hand as close to the *Break* as he can, left if when the *Break* be between the fore-Finger and Thumb of his left Hand, the force of *Breaking* off the *Break* should bow the *Shanck* of the *Letter*.

### ¶ 4. Of Rubbing of Letters.

*Rubbing* of *Letters* is also most commonly Boys-work : But when they do it, they provide *Finger-stalls* for the two fore-Fingers of the right-Hand : For else the Skin of their Fingers would quickly rub off with the sharp greet of the Stone. These *Finger-stalls* are made of old *Ball-Leather* or *Pelts* that *Printers* have done with : Then having an heap of one sort of *Letters* lying upon the Stone before them, with the left-Hand they pick up the *Letter* to be *Rub'd*, and lay it down in the *Rubbing* place with  
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one of its sides upwards they clap the Balls of the fore-Finger and middle-Finger upon the fore and hinder-ends of the *Letter*, and *Rubbing* the *Letter* pretty lightly backwards about eight or nine Inches, they bring it forwards again with an hard pressing *Rub* upon the *Stone*; where the fore-Finger and Thumb of the left-Hand is ready to receive it, and quickly turn the opposite side of the *Letter*, to take such a *Rub* as the other side had.

But in *Rubbing* they are very careful that they press the Balls of their Fingers equally hard on the *Head* and *Foot* of the *Letter*. For if the *Head* and *Foot* be not equally prest on the *Stone*, either the *Head* or *Foot* will *Drive out* when the *Letters* come to be *Composed* in the *Stick*; So that without *Rubbing* over again they cannot be *Drest*.

#### ¶ 5. Of Kerning of Letters.

Amongst the *Italick-Letters* many are to be *Kern'd*, some only on one side, and some both sides. The *Kern'd-Letters* are such as have part of their *Face* hanging over one side or both sides of their *Shanck*; These cannot be *Rub'd*, because part of the *Face* would *Rub* away when the whole side of the *Shanck* is toucht by the *Stone*: Therefore they must be *Kern'd*, as *Founders* call it: Which to do, they provide a small *Stick* bigger or less, according as the *Body* of the *Letter* that is to be *Kern'd*. This *Kerning-stick* is somewhat more than an Handful long, and it matters not whether it be square or round: But if it be square the Edges of it must be pret-

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ty well rounded away, lest with long usage and hard Cutting they Gall the Hand. The upper side of this *Kerning-Stick* is flatted away somewhat more than the length of the *Letter*, and on that flat part is cut away a flat bottom with two square sides like the Sides or *Ledges* of the *Lining-stick* to serve for two *Sholders*. That side to be *Kern'd* and *scrap'd*, is laid upwards, and its opposite side on the bottom of the *Kerning-stick* with the *Foot* of the *Letter* against the bottom *Sholder*, and the side of the *Letter* against the side *Sholder* of the *Kerning-stick*.

He also provides a *Kerning-Knife* : This is a pretty strong piece of a broken Knife, about three Inches long, which he fits into a Wooden-Handle : But first he breaks off the Back of the Knife towards the Point, so as the whole edge lying in a straight-line the piece broken off from the back to the edge may leave an angle at the point of about 45 Degrees, which irregular breaking ( for so we must suppose it ) he either *Grinds* or *Rubs* off on a *Grind-stone*. Then he takes a piece of a Broom-stick for his Handle, and splits one end of it about two Inches long towards the other end, and the split part he either Cuts or Rasps away about a *Brevier* deep round about that end of the Handle. Then he puts about an Inch and an half of his broken blade into the split or slit in the Handle, and ties a four or five doubled Paper a little below the Rasped part of the Handle round about it, to either a *Pica* or *Long-Primmer* thick of the slit end of the Handle. This *Paper* is so ordered that all its sides round about shall stand equally distant from all the

he Rasped part of the Handle : For then setting the other end of the Handle in Clay, or otherwise fastening it upright, when *Mettal* is poured in between the Rasped part of the Handle and the Paper about it, that *Mettal* will make a strong *Ferril* to the *Handle* of the *Knife*. The irregularities that may happen in *Casting* this *Ferril* may be Rasped away to make it more handy and Handsome.

Now to return again where I left off. Holding the Handle of the *Kerning-stick* in his left-Hand, He lays the side of the *Letter* to be *Kern'd* upwards with the *Face* of the *Letter* towards the end of the *Kerning-stick*: the side of the *Letter* against the side *Sholder* of the *Kerning-stick*, and the *Foot* of the *Letter* against the bottom *Sholder* of the *Kerning-stick*, and laying the end of the Ball of his left-Hand Thumb hard upon the *Shanck* of the *Letter* to keep its *Side* and *Foot* steddly against the *Sholders* of the *Kerning-stick*, he with the *Kerning-Knife* in his right-Hand cuts off about one quarter of the *Mettal* between the *Beard* of the *Shanck* and the *Face* of the *Letter*. Then turning his *Knife* so as the back of it may lean towards him, he scrapes towards him with the edge of the *Knife* about half the length of that upper-side, viz. about so much as his Thumb does not cover: Then he turns the *Face* of the *Letter* against the lower *Sholder* of the *Kerning-stick*, and scraping fromwards him with a stroak or two of his *Knife* smoothenes that end of the *Letter* also.

If the other side of the *Letter* be notto be *Kern'd*

it was before *Rub'd* on the *Stone*, as was shewed in the last ¶: But if it be to be *Kern'd*, then he makes a little hole in his *Kerning-stick*, close to the lower *Sholder* of it and full deep enough to receive all that part of the *Face* of the *Letter* that hangs over the *Shanck*, that the *Shanck* of the *Letter* may lie flat and solid on the bottom of the *Kerning-stick*, and that so the *Shanck* of the *Letter* bow not when the weight of the *Hand* presses the edge of the *Kerning-Knife* hard upon it. Into this hole he puts (as before said) so much of the *Face* of the *Letter* as hangs over the side of the *Shanck*, and so scrapes the lower end of the *Letter* and *Kerns* the upper end, as he did the former side of the *Letter*.

¶ 6. Of Setting up, or Composing Letters.

I described in § 5. ¶ 2. the *Lining-stick*, But now we are come to *Setting up*, or *Composing* of *Letters*. The *Founder* must provide many *Composing-sticks*; five or six dozen at the least. These *Composing-sticks* are indeed but long *Lining-sticks*, about seven or eight and twenty Inches long *Handle* and all: Whereof the *Handle* is about three Inches and an half long: But as the *Lining-stick* I described was made of *Brass*: So these *Composing-sticks* are made of *Beech-Wood*.

When the Boy *Sets up Letters* (for it is commonly Boys Work) The *Caster Casts* about an hundred *Quadrats* of the same *Body* about half an Inch broad at least, let the *Body* be what it will, and of the

the length of the whole *Carriage*, only by placing a flat *Brass* or *Iron Plate* upon the *Stool* of the *Mold* close against the *Carriage* and *Body*, to stop the *Mettal* from running farther.

The Boy (I say) takes the *Composing-stick* by the *Handle* in his left-Hand, clasping it about with his four Fingers, and puts the *Quadrat* first into the *Composing-stick*, and lays the Ball of his Thumb upon it, and with the fore-Finger and Thumb of his right-Hand, assisted by his middle Finger to turn the *Letter* to a proper position, with its *Nick* upwards towards the bottom side of the *Composing-stick*; while it is coming to the *Stick*, he at the same time lifts up the Thumb of his left-Hand, and with it receives and holds the *Letter* against the fore-side of the *Quadrat*, and after it, all the *Letters* of the same sort, if the *Stick* will hold them, If not he *Sets* them in so many *Sticks* as will hold them: Observing to Set all the *Nicks* of them upwards, as aforesaid. And as he Set a *Quadrat* at the beginning of the *Composing-stick*, so he fills not his *Stick* so full, but that he may Set another such *Quadrat* at the end of it.

¶ 7. *Some Rules and Circumstances to be observed in Setting up Letters.*

1. If they *Drive* a little out at *Head* or *Foot*, so little as not to require new *Rubbing* again, then he holds his Thumb harder against the *Head* or *Foot*, so as to draw the *Driving* end inward: For else when they come to *Scraping*, and *Dressing* the *Hook* of the



*Dressing-Hook* drawing Square, will endanger the middle or some other part of *Letters* in the *Stick* to *Spring* out : And when they come into the *Dressing-block*, the *Knots* of the *Blocks* drawing also square subject them to the same inconvenience. And if they *Drive* out at the *Head*, the *Feet* will more or less stand off one another : So that when the *Tooth* of the *Plow* comes to *Dress* the *Feet*, it will more or less job against every *Letter*, and be apt to make a bowing at the *Feet*, or at least make a *Bur* on their sides at the *Feet*.

2. When *Short-Letters* are begun to be *Set* up in a *Stick*, the whole *Stick* must be fill'd with *Short-Letters* : Because when they are *Dressing*, the *Short-Letters* must be *Bearded* on both sides the *Body* : And should *Short-Letters* or *Ascending* or *Descending* or *Long* stand together, the *Short* cannot be *Bearded* because the *Stems* of the *Ascending* or *Descending* or *Long-Letters* reach upon the *Body* to the *Beard* : So that the *Short-Letters* cannot be *Bearded*, unless the *Stems* of the other *Letters* should be scraped off.

3. When *Long-Letters* are begun to be *Set* up in the *Stick*, none but such must fill it, for the reason aforesaid.

4. If any *Letters Kern'd* on one side be to be *Set* up, and the *Stems* of the same *Letters* reach not to the opposite *Beard* as *f* or *g*, in *Setting* up these or such like *Letters*, every next *Letter* is turned with its *Nick* downwards, that the *Kern* of each *Letter* may lie over the *Beard* of its next. But then they must be all *Set* up again with a *Short-Letter*

*Letter* between each, that they may be *Bearded*.

As every *Stick-full* is set up, he sets them by upon the *Racks*, ready for the *Dresser* to *Dress*, as shall be shewed in the next §.

The *Racks* are described in *Plate 21.* at A. They are made of Square *Deal Battens* about seven Inches and an half long, as at *a b a b a b*, and are at the ends *b b* let into two upright *Stiles*, standing about sixteen Inches and an half asunder, and the fore-ends of the *Racks* mounting a little, that when *Sticks* of *Letters* is Set by on any two parallel *Racks*, there may be no danger that the *Letters* in them shall slide off forward; but their *Feet* rest against the *Bottom-Ledges* of the *Composing-sticks*. They set by as many of these *Sticks* with *Letter* in them, as will stand upon one another between every two *Rails*, and then set another pile of *Sticks* with *Letter* in them before the first, till the length of the *Rail* be also filled with *Sticks* of *Letter* before one another. They set all the *Sticks* of *Letters* with their ends even to one another with the *Faces* of the *Letter* forwards.

This *Frame of Racks* is always placed near the *Dressing-Bench*, that it may stand convenient to the *Letter-Dressers* Hand.

#### § 20. ¶ I. Of Dressing of Letters.

There be several Tools and Machines used to the *Dressing* of *Letters*: And unless I should describe them to you first, you might perhaps in my following discourse not well understand me :

me: Wherefore I shall begin with them: They are as follows.

1. The *Dressing-Sticks*.
2. The *Bench, Blocks* and its Appurtenances.
3. The *Dressing-Hook*.
4. The *Dressing-Knife*.
5. The *Plow*.
6. The *Mallet*.

Of each of these in order.

### ¶ 2. Of the *Dressing-Sticks*.

I need give no other Description of the *Dressing-sticks*, than I did in the last § and ¶ of the *Composing-Sticks*: Only they are made of hard Wood, and of greater Substance, as well because hard Wood will work smoother than soft Wood, as because greater Substance is less Subject to warp or shake than smaller Substance is. And also because hard Wood is less Subject to be penetrated by the sharpness of the *Bur* of the *Mettal* on the *Letters* than the soft.

### ¶ 3. Of the *Block-Grove*, and its Appurtenances.

The *Block-Grove* is described in *Plate 21. a b* The *Groove* in which the *Blocks* are laid, two Inches deep, and seven Inches and an half wide at one end, and seven Inches wide at the other end: One of the *Cheeks* as *c* is three Inches and an half broad at one end, and three Inches broad at the other end, and the other *Cheek* three Inches broad the whole Length

Length : The Length of these *Cheeks* are two and twenty Inches.

The *Wedge e f* is seven and twenty Inches and an half long, two Inches broad at one end, and three Inches and an half broad at the other end; And two Inches deep.

g g g g The *Bench* on which the *Dressing-Blocks* are placed, are about sixteen Inches broad, and two Foot ten Inches high from the Floor. The *Bench* hath its farther Side, and both ends, railed about with slit Deal about two Inches high, that the *Hook*, the *Knife*, and *Plow*, &c. fall not off when the Work-man is at Work.

The *Blocks* are described in *Plate 21* at *a b*: They are made of hard Wood. These *Blocks* are six and twenty Inches long, and each two Inches square. They are *Male* and *Female*, *a* the *Male*, *b* the *Female*: Through the whole Length of the *Male-Block* runs a *Tongue* as at *a b*, and a *Groove* as at *c d*, for the *Tongue* of the *Plow* to run in; This *Tongue* is about half an Inch thick, and stands out square from the upper and under sides of the *Block*. About three Inches within the ends of the *Block* is placed a *Knot* as at *c c*: These *Knots* are small square pieces of *Box-wood*, the one above, and the other below the *Tongue*.

The *Female Block* is such another *Block* as the *Male Block*, only, instead of a *Tongue* running through the length of it a *Groove* is made to receive the *Tongue* of the *Male-Block*, and the *Knots* in this *Block* are made at the contrary ends, that when the *Face* of a *Stick of Letter* is placed on the

C c

Tongue

*Tongue* the *Knot* in the *Male-Block* stops the *Stick* of *Letter* from sliding forwards, while the other *Knot* in the *Female-Block* at the other end, by the knocking of a *Mallet* on the end of the *Block* forces the *Letter* between the *Blocks* forwards, and so the whole *Stick* of *Letters* between these two *Knots* are screw'd together, and by the *Wedge e f* in *Plate 21* (also with the force of a *Mallet*) *Wedges* the two *Blocks* and the *Stick* of *Letter* in them also tight, and close between the sides of the two *Blocks*; that afterwards the *Plow* may more certainly do its Office upon the *Foot* of the *Letter*; as shall be shew'd hereafter.

### ¶ 3 Of the Dressing-Hook.

The *Dressing-Hook* is described in *Plate 21* at c. This is a long square *Rod* of *Iron*, about two Foot long and a *Great-Primmer* square: Its end *a* is about a *two-Lin'd English* thick, and hath a small *Return* piece of *Iron* made square to the under-side of the *Rod*, that when the whole *Dressing-Hook* is laid along a *Stick* of *Letter*, this *Return* piece or *Hook* may, when the *Rod* is drawn with the *Ball* of the Thumb, by the *Knot* on the upper side of it at c, draw all the *Letter* in the *Stick* tight and close up together, that the *Stick* of *Letter* may be *Scraped*, as shall be shew'd.



## ¶ 4 Of the Dressing-Knife.

The *Dressing-Knife* is delineated at d in *Plate 21*. It is only a short piece of a *Knife* broken off about two Inches from the *Sholder*: But its Edge is *Basil'd* away from the back to the point pretty suddenly to make it the stronger: The *Sprig* or *Pin* of the *Handle* is commonly let into an Hole drilled into a piece of the Tip of an *Harts-horn*, as in the Figure and is fastned in with *Rosen*, as other *Knives* are into their *Handles*.

## ¶ 5 Of the Plow.

The *Plow* is delineated in *Plate 21* at e: It is almost a common *Plain* (which I have already described in *Vol. 1. Numb. 4. Plate 4. and § 2 to 9.*) only with this distinction, that through the length of the *Sole* runs such a *Tongue*, as does through the *Male-Block* to slide tight and yet easily through the *Groove* made on the top of the *Male-block*: Its *Blade* makes an *Angle* of 60 Degrees with the *Sole* of it.

## § 21. ¶ 1. Of Dressing of Letters.

THE *Letter Dresser* hath (as I told you before) his *Letter Set* up in *Composing-sticks*, with their *Nicks* upwards, and those *Sticks* set upon the *Racks*: Therefore he takes one *Stick* off the *Racks*, and placing the *Handle* of the *Composing-stick* in his left-hand,

he takes the contrary end of the *Dressing-stick* in his right-hand, and laying the Back of the *Dressing-stick* even upon or rather a little hanging over the Back of the *Composing-stick*, that the *Feet* of the *Letter* may fall within the *Bottom-Ledge* of the *Dressing-stick*; He at the same time fits the *Side-Ledge* of the *Dressing-stick* against the farther end of the *Line* of *Letters* in the *Composing-stick*: And holding then both *Sticks* together, his left-Hand at the *Handle*-end of the *Composing-stick*, and his right-Hand within about two *Handfuls* of the *Handle*-end of the *Dressing-stick*, He turns his *Hands*, *Sticks* and all, outward from his left-Hand, till the *Composing-stick* lies flat upon the *Dressing-stick*, and consequently the *Letters* in the *Composing-stick* is turned and laid upon the *Dressing-stick*.

Then he goes as near the *Light* as he can with the *Letters* in his *Dressing-stick*, and examines what *Letters* Come not well either in the *Face* or *Shanck*: So that then holding the *Dressing-stick* in his left-Hand, and tilting the *Bottom-Ledge* a little downward, that the *Feet* of the *Letter* may rest against the *Bottom-Ledge*, and laying the Ball of his Thumb upon any certain Number of *Letters* between his *Body* and the *Letter* to be *Cast out*, He with the *Foot* of a *Space* or some thin *Letter*, lifts up the *Letter* to be *Cast out*, and lets it fall upon the *Dressing-Bench*: and thus he does to all the *Letters* in that *Stick* that are to be *Thrown out*.

Then taking again the *Dressing-Stick* in his left-Hand at or near the handle of it, he takes the *Dressing-Hook* at the *Knot*, between the fore-Finger and Thumb

Thumb of his right-Hand, and laying the *Hook* over the edge of the *Quadrat* at the farther end of the *Dressing-stick*, near the *bottom-Ledge* of it, he slips his right-Hand to the *Handle* of the *Dressing-stick*, and his left-Hand towards the middle of the *Dressing-stick*, so as the end of the Ball of his Thumb may draw by the farther end of the *Knot* on the *Dressing-Hook* the whole *Dressing-Hook*, and the *Hook* at the end of it the whole *Stick* of *Letter* close together towards him; While at the same time he with his Fingers clutched about the *Stick* and *Letter*, and the Thumb-ball of his Hand presses the under flat of the *Hooking-stick* close against the *Letter* and *Dressing-stick*, that the *Letter* in the *Stick* may lie fast and manageable.

Then he takes the *Handle* of the *Dressing-Knife* in his right-Hand, and inclining the back of it towards his *Body*, that its *Basil-edge* may *Cut* or *Scraped* the *smoother*, He *Scrapes* twice or thrice upon so much of the whole *Line* of *Letters* as lies between the outer-side of the *Dressing-Hook* and the *Face* of the *Letter*.

But if twice or thrice *Scraping*, have not taken all the *Bur* or irregularities off so much of the *Letter* as he *Scraped* upon, he *Scrapes* yet longer and oftner till the whole number of *Letters* in the *Dressing-stick* from end to end seems but one intire piece of *Mettal*.

Thus is that side of the fore-part (*viz.* that part towards the *Face*) of the *Shank* of the *Body* finisht.

To *Scrape* the other end of that side of the *Let-*

ter, viz. that towards the Feet ; He turns the *Handle* of the *Stick* from him, and removing the *Dressing-Hook* towards the *Face* of the *Letter* which is already *Scraped*, he places his Thumb against the *Knot* of the *Dressing-Hook*, and presses it hard from him, that the *Hook* of the *Dressing-Hook* being now towards him, may force the whole *Stick* of *Letter* forwards against the *Side-Ledge* of the *Dressing-stick*; that so the whole *Line* in the *Stick* may lie again the faster and more manageable : Then he *Scrapes* with the *Dressing-Knife* as before, till the end of the *Shank* of the *Letter* towards the *Feet* be also *Drest*.

Then he lays by his *Dressing-Hook*, and keeping his *Dressing-stick* of *Letter* still in his left-Hand, he takes a second *Dressing-stick*, with its *Handle* in his right-Hand, and lays the *Side-Ledge* of it against the hither side of the *Quadrat* at the hither end of the *Dressing-stick*, and the *bottom-Ledge* of the second *Stick* hanging a little over the *Feet* of the *Letter*, that they may be comprehended within the *bottom-Ledge* of the second *Dressing-stick*; and so removing his left-Hand towards the middle of both *Dressing-sticks*, and clasping them close together, he turns both Hands outwards towards the left, till the *Letter* in the first *Dressing-stick* lie upon the second *Dressing-stick*, and then the *Face* of the *Letter* will lie outwards toward the right-Hand, and the *Nicks* upwards. Then he uses the *Dressing-Hook* and *Dressing-Knife* to *Scrape* this side the *Line* of *Letter*, as he did before to the other side of the *Line* of *Letter* : So shall both sides be *Scraped* and *Drest*.

Having thus *Scraped* both the sides, He takes the  
*Handle*

*Handle* of the *Dressing-stick* into his left Hand, as before, and takes the *Male-block* into his right-Hand, and placing the *Tongue* of the *Block* against the *Face* of the *Letter* in the *Dressing-stick*, he also places the *Knot* of the *Block* against the farther side of the *Quadrat* at the farther end of the *Stick*, and so placing his right-Hand underneath the middle of the *Dressing-stick* and *Block*, he turns his Hand outwards towards the left, as before, and transfers the *Letter* in the *Dressing-stick* to the *Male-Block*: Yet he so holds and manages the *Block* that the *Shanck* of the *Letter* may rest at once upon the side of the *Block* the *Knot* is placed in, and the *Face* of the *Letter* upon the *Tongue*.

When his *Stick* of *Letters* is thus transfer'd to the *Male-Block*, He claps the middle of the *Male-Block* into his left-Hand, tilting the *Feet* of the *Letter* a little upwards, that the *Face* may rest upon the *Tongue*, and then takes about the middle of the *Female-Block* in his right-Hand, and lays it so upon the *Male-Block*, that the *Tongue* of the *Male-Block* may fall into the *Tongue* of the *Female-Block*, and that the *Knot* at the hither end of the *Female Block* may stand against the hither side of the *Quadrat* at the hither end of the *Line* of *Letters*: So that when the *Knot* of the *Male-Block* is lightly drawn towards the *Knot* of the *Female-Block*, or the *Knot* of the *Female-Block* lightly thrust towards the *Knot* of the *Male-Block*, both *Knots* shall squeeze the *Letter* close between them.

Then he grasps both *Blocks* with the *Letter* between them in both his Hands, and lays them in  
the



the *Block-Groove*, with the *Feet* of the *Letter* upwa<sup>r</sup>ds, and the hither side of the hither *Block* against the hither *Cheek* of the *Block-Groove*. And putting the *Wedge* into the vacant space between the *Blocks* and the further *Cheek* of the *Block-Groove*, he lightly with his right-Hand thrusts up the *Wedge* to force the *Blocks* close together, and pinch the *Letter* close between the *Blocks*.

Then with the *Balls* of the *Fingers* of both his *Hands*, he Patts gently upon the *Feet* of the *Letter*, to press all their *Faces* down upon the *Tongue*; which having done, he takes the *Mallet* in his right-Hand, and with it knocks gently upon the head of the *Wedge* to pinch the *Letter* yet closer to the insides of the *Blocks*. Then he Knocks lightly and successively upon the *Knot-ends* of both the *Blocks*, to force the *Letters* yet closer together. And then again knocks now pretty hard upon the head of the *Wedge*, and also pretty hard upon the *Knot-ends* of the *Blocks*, to Lock the *Letter* tight and close up.

Then he places the *Tongue* of the *Plow* in the upper *Groove* of the *Block*; And having the *Tooth* of the *Iron* fitted in the *Plow*, so as to fall just upon the middle of the *Feet* of the *Letter*, he grasps the *Plow* in his right-Hand, placing his *Wrist-Ball* against the *Britch* of it, and guiding the fore-end with his left-Hand, slides the *Plow* gently along the whole length of the *Blocks*; so as the *Tooth* of the *Iron* bears upon the *Feet* of the *Letter*: And if it be a small *Letter* he *Plows* upon, the *Tooth* of the *Iron* will have cut a *Groove* deep enough through the length of the whole *Block* of *Letters*:

ters : But if the *Body* of the *Letter* be great, he reiterates his *Traverses* two three or four times according to the Bigness of the *Body* of the *Letter*, till he have made a *Groove* about a *Space* deep in the *Feet* of the *Shancks* of the whole *Blocks* of *Letter*, and have cut off all the irregularities of the *Break*.

Then with a small piece of *Buff* c some other soft *Leather*, he rubs a little upon the *Feet* of the *Letter* to smoothen them.

Then he unlocks the *Blocks* of *Letter*, by knocking with the *Mallet* upon the small end of the *Wedge*, and first takes the *Wedge* from between the *Blocks* and *Cheeks*, and lays it upon the farther *Cheek*, and afterwards takes the *Blocks* with *Letter* in it near both ends of the *Blocks* between the *Fingers* and *Thumbs* of both his *Hands*, and turns the hithermost *Block* upon the hithermost *Cheek*, and with his *Fingers* and *Thumbs* again lifts off the upper *Block*, leaving the *Letter* on the undermost *Block* with its *Face* against the *Tongue*.

Then taking the *Block* with *Letter* in it in his left-*Hand*, he places the *Knot-end* from him, and takes the *Handle* of the *Dressing-stick* in his right-*Hand*, and lays the *Side-Ledge* of it against the hither side of the *Quadrat* at the hither end, and the *Bottom-ledge* against the *Feet* of the *Letter*, he grasps the *Handle* of the *Dressing-stick* *Block* and all in his left-*Hand*, and lays his right-*Hand* *Thumb* along the under side of the *Dressing-stick* about the middle, and with the *Fingers* of the same *Hand* grasps the *Block*, and turning his *Hands*, *Block*, and *Dressing-stick* to the right, transfers the *Letter* in the *Block* upon the *Dressing-stick*.

D d

Then

Then grasping the *Dressing-stick* by the *Handle* with his left-Hand, he with his right-Hand takes the *Dressing-Hook* by the *Knot*, and lays the inside of the *Hook* of it against the farther side of the *Quadrat* at the farther end of the *Stick*, and drawing the *Hook* and *Letter* in the *Dressing-stick* with his left Thumb by the *Knot* close up toward him, he resting the *Stick* upon the *Dressing-bench* that he may *Scrape* the harder upon the *Beard* with the Edge of the *Dressing-Knife*, *Scrapes* off the *Beard* as near the *Face* as he dares for fear of spoiling it, and about a Thick *Space* deep at least into the *Shanck*.

If the Bottom and Top are both to be *Bearded*, He transfers the *Letter* into another *Dressing-stick*, as hath been shewed, and *Beards* it also as before.

¶ 2. *Some Rules and Circumstances to be observed in Dressing of Letters.*

1. The *Letter-Dresser* ought to be furnisht with three or four sorts of *Dressing-sticks*, which differ nothing from one another save in the Height of their *Ledges*. The *Ledges* of one pair no higher than a *Scaboard*. This pair of *Sticks* may serve to *Dress*, *Pearl*, *Nomparel*, and *Brevier*. Another pair whose *Ledges* may be a *Nomparel* high. And this pair of *Dressing-sticks* will serve to *Dress* *Brevier*, *Long-Primmer*, and *Pica*: Another pair whose *Ledges* may be a *Long-Primmer* high: And these *Dressing-sticks* may serve to *Dress* *Pica*, *English*, *Great-Primmer*, and *Double-Pica*. And if you will another pair of *Dressing-*  
sing-

*Dressing-sticks*, whose *Ledges* may be an *English* High : And these *Dressing-sticks* may serve to *Dress* all big *Bodied Letters*, even to the Greatest.

2. As he ought to be furnisht with several sorts of *Dressing-sticks* as aforesaid : So ought he also to be furnisht with several *Blocks*, whose *Knots* are to correspond with the *Sizes* of the *Ledges* of the *Dressing-sticks*, for the *Dressing* of several *Bodies* as aforesaid.

3. He ought to be furnisht with three or four *Dressing-Hooks*, whose *Hooks* ought to be of the several *Depths* aforesaid, to fit and suit with the several *Bodied-Letters*.

4. He must have two *Dressing-Knives*, one to lie before the *Blocks* to *Scrape* and *Beard* the *Letter* in the *Sticks*, and the other behind the *Dressing-blocks* to use when occasion serves to *Scrape* off a small *Bur*, the *Tooth* of the *Plow* may have left upon the *Feet* of the *Letter*. And though one *Dressing-Knife* may serve to both these uses: Yet when *Work-men* are in a *Train* of *Work* they begrutch the very turning the *Body* about, or stepping one step forward or backward; accounting that it puts them out of their *Train*, and hinders their riddance of *Work*.

5. For every *Body* of *Letter* he is to have a particular *Plow*, and the *Tooth* of the *Iron* of each *Plow* is to be made exactly to a set bigness, the measure of which bigness is to be taken from the size of the *Break* that is to be *Plowed* away. For Example, If it be a *Pearl Body* to be *Plowed*, the breadth of the *Tooth* ought not to be above a thin *Scaboard*: Because the *Break* of that *Body* cannot be bigger, for Reasons I

have given before ; But the *Tooth* must be full broad enough, and rather broader than the *Break*, lest any of the irregularity of the *Break* should be left upon the *Foot* of the *Letter*. And so for every *Body* he fits the *Tooth* of the *Iron*, full broad enough and a little broader than the size of the *Break*. This is one reason why for every particular *Body* he ought to have a particular *Plow*. Another reason is.

The *Tooth* of this *Plow* must be exactly set to a punctual distance from the *Tongue* of the *Plow* : For if they should often shift *Irons* to the several *Stocks* of the *Plow*, they would create themselves by shifting more trouble than the price of a *Stock* would compensate.

A *Fount* of *Letter* being new *Cast* and *Drest*, the *Boy Papers* up each sort in a *Cartridge* by it self, and puts about an hundred Pounds weight, viz. a *Porters* Burthen into a *Basket* to be sent to the *Master-Printers*.

The *Steel-Punches* being now *Cut*, the *Molds* made, the *Matrices Sunk*, the *Letters Cast*, and *Drest*, the application of these *Letters* falls now to the task of the *Compositer* ; whose *Trade* shall be (God willing) the Subject of the next *Exercises*.

F I N I S.



Plate 18.

*The Under  
half of the  
Mold*

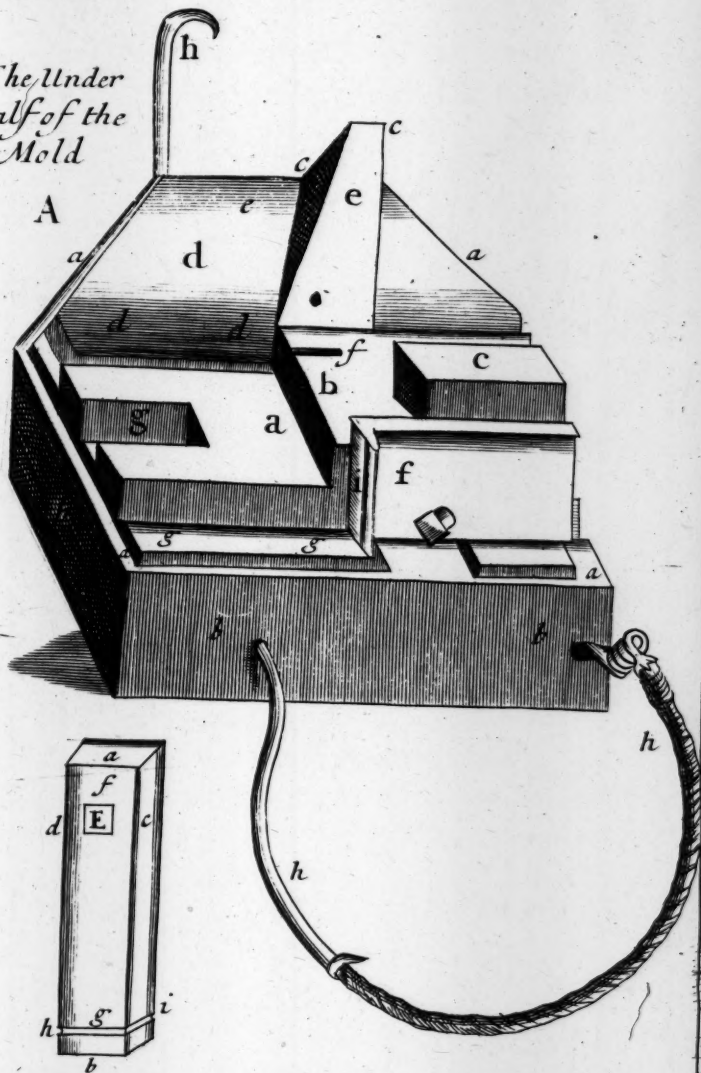
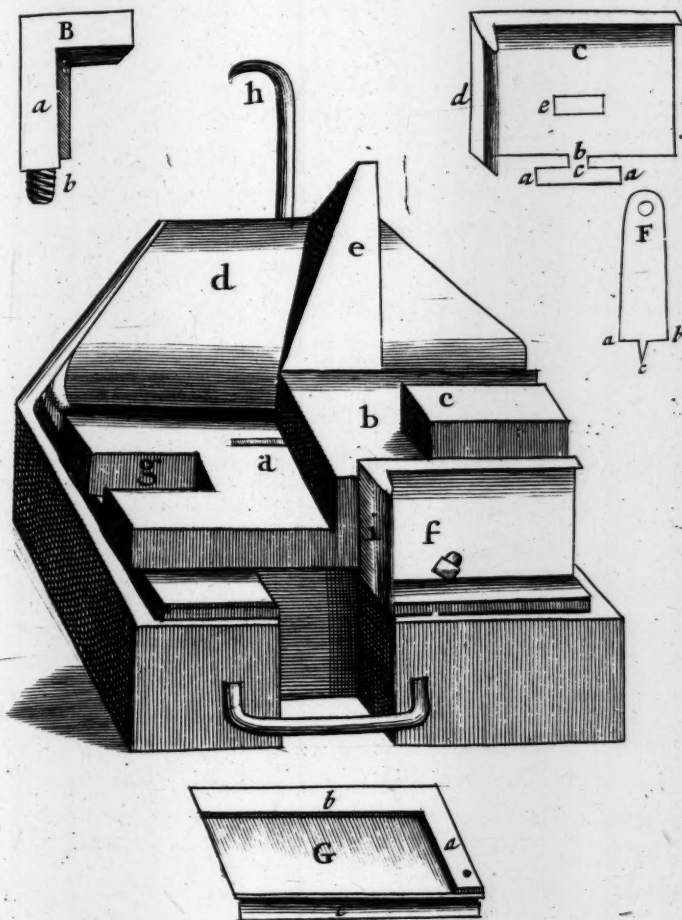




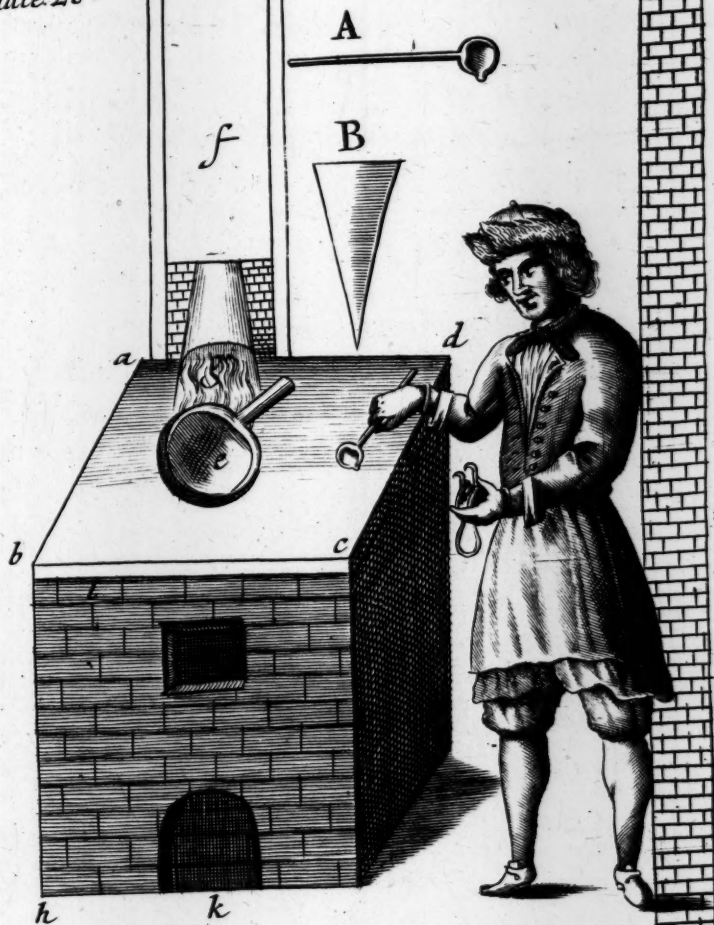
Plate 19.

*The Upper half of the Mold*





Platz. 20.





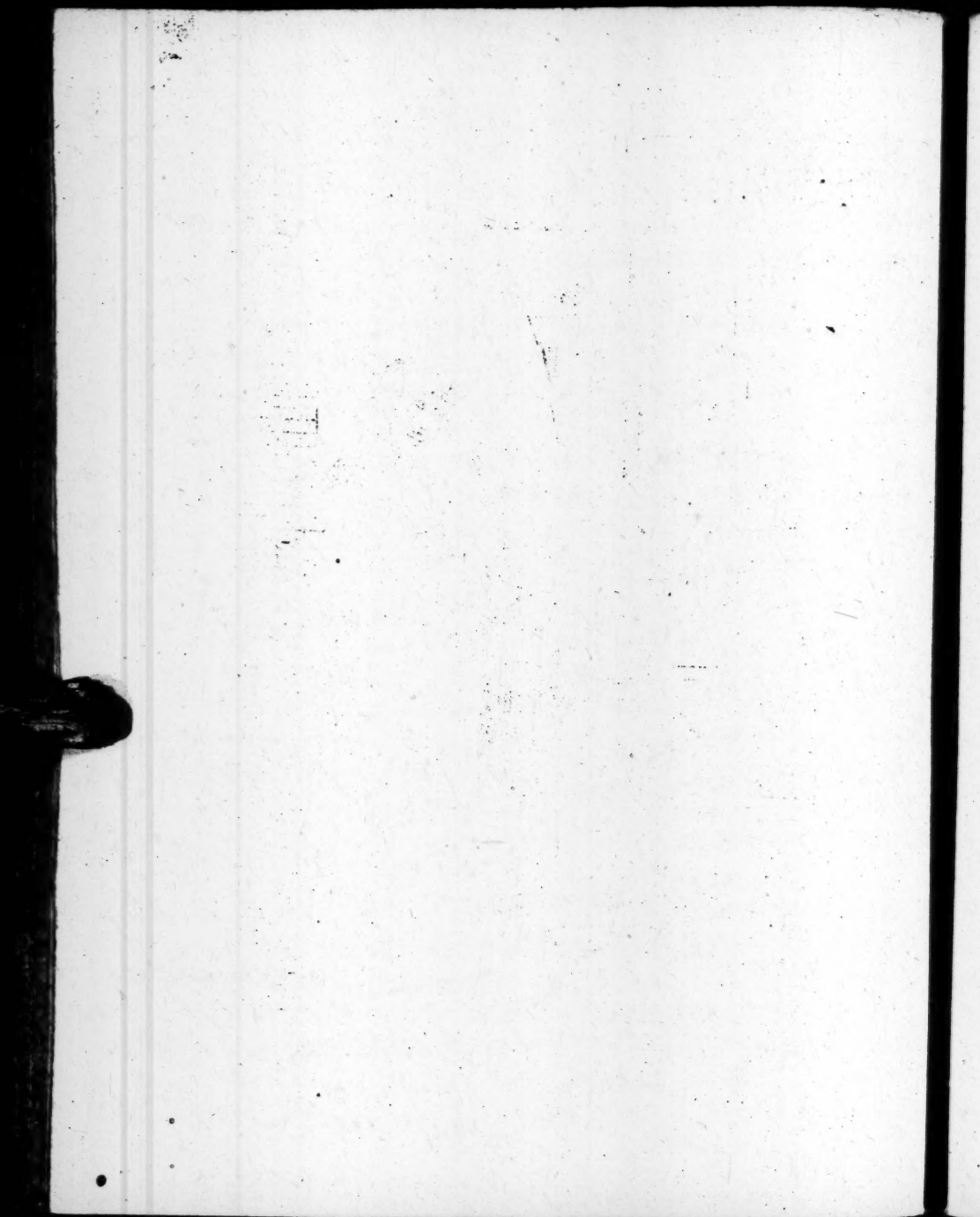


Plate 21.

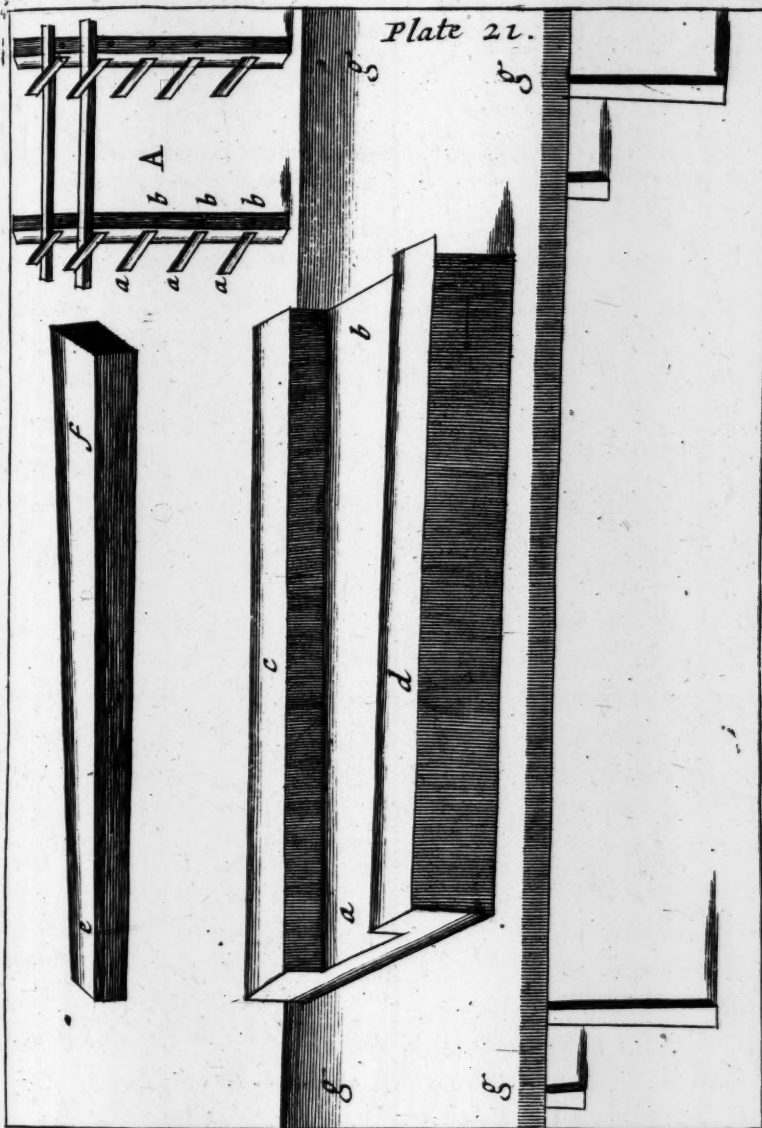
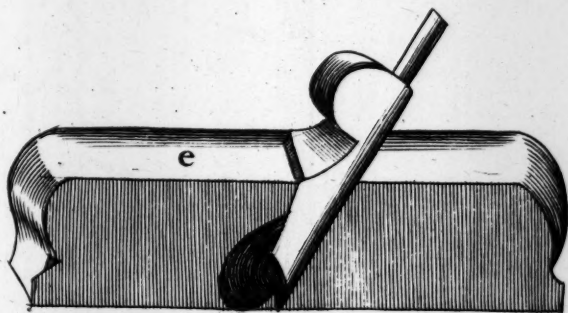
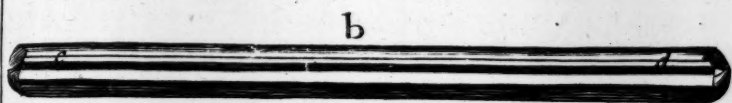
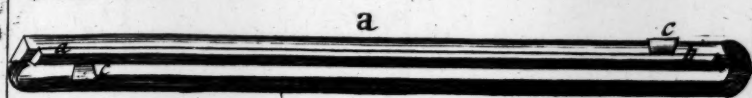




Plate 22.







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# MECHANICK EXERCISES:

Or, the Doctrine of

## Handy-works.

Applied to the

## Compositers Trade.

The Second VOLUME

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# PREFACE.

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**I**N a strict sence, a good Compositer need be no more than an English Scholler, or indeed scarce so much; for if he knows but his Letters and Characters he shall meet with in his Printed or Written Copy, and have otherwise a good natural capacity, he may be a better Compositer than another Man whose Education has adorn'd him with Latin, Greek, Hebrew, and other Languages; and shall want a good natural Genius: For by the Laws of Printing, a

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Compositer is *strictly to follow his Copy, viz. to observe and do just so much and no more than his Copy will bear him out for*; so that his Copy is to be his Rule and Authority: But the carelesness of some good Authors, and the ignorance of other Authors, has forc'd Printers to introduce a Custom, which among them is look'd upon as a task and duty incumbent on the Compositer, viz. to discern and amend the *bad Spelling and Pointing of his Copy, if it be English*; But if it be in any Forrain Language, the Author is wholly left to his own Skill and Judgement in Spelling and Pointing, &c. his Copy, and Correcting the Prooves, unless they be Latine, Greek or Hebrew, for to those Languages there is generally a Corrector belongs to the Printing-House: And how well other Forrain Languages are Corrected by the Author, we may perceive by the English that is Printed in Forrain Countries.

Therefore upon consideration of these accidental circumstances that attend Copy, it is necessary that a Compositer be a good English Schollar at least; and that he know the present traditional Spelling of all English Words, and that he have so much Sence and Reason, as to Point his Sentences properly: when to begin a Word with a Capital Letter, when (to render the Sence of the Author more intelligent to the Reader) to Set some Words or Sentences in Italick or English Letters, &c. But of this more at large in ¶ 6.

Thus much of his qualifications: Now to his Taask,

The Master-Printer gives him his Copy, and directs him to his standing Place or Case, and orders him Letter to Work withal.

If his Case want Papering, as all New Cases do, and many times old, He must Paper his Case, §. 22.

§. 22. ¶. 1. *Of Papering and Laying the*  
CASE.

THE *Compositer* sends the Boy to the *Master-Printer*, or to him that attends the Warehouse, for *Half a Quire*, or a *Quire*, or so much as he guesles he shall want, of good strong *Wast-Paper*, and cuts it into so many several Scantlins as the number of each Scantlin of his *Boxes* in his *Cafe* are; but he cuts his *Papers* so large, as each *Paper* may ly double in its *Box*, and have enough besides to fold almost half way towards the middle of each *Paper*, and also enough to turn up again against the sides of each *Box*, about the thickness of a *Pica*, or an *Englisch*, above the bottom of the *Box*; and its *Paper* on all its sides, except the upper side of the *Box*, which, as near as he can, he leaves no turning up of *Paper* to, because the tendency the whole *Cafe* has downwards by its a-slope position, the *Letter* in each *Box* tends also downwards, and therefore is not so apt to get between the *Paper* and that side of the *Box*, as between the *Paper* and the other sides of each *Box*: But yet that upper side, and all the other sides of the *Box*, he *Papers* so smooth and tight, that he leaves no wrinkles in the turnings up against the sides of the *Box*; but if there be any, drives them carefully into the corners of the *Box*, lest his *Letter*, especially if it be Small, should get into the openings of those

Wrinkles, and in time work their way under the Paper.

Having *Paper'd* his *Cafe*. he considers how the rest of the *Cases* in that *House* ly, viz. into what *Boxes* the several *Letters* are to be disposed; for they are not in every *Printing-House* disposed alike, and accordingly he applies himself to fill his *Cafe* with *Letter*.

If a *Fount* of *New Letter* be brought home from the *Founders*, the *Compositer* has no more to do, but to fill each *Box* in his *Cafe* with so many of each sort as each *Box* will hold, and fall to *Composing* till he has emptied his *Cafe*; which the same way he fills again, and *Composes* on again till the whole *Fount* be *Set up*: But when he has no longer any *New Letter* to work upon, he must *Distribute* some former *Set Forms* to fill his *Cafe* withal.

And before I shew you the Rules and Method of *Distributing* and *Composing*, it will be necessary I say somewhat of the *Cafe*, and *Laying* it.

By the *Cafe* is meant, in *Printers* common dialect, a *Pair of Cases*, viz. the *Upper* and the *Lower-Cafe*: They are described with the most common way of *Laying* them, in Plate 2. A the *Upper Cafe*, B the *Lower Cafe*. The *Upper Cafe* is divided into Ninety eight *Boxes* all of equal size; but the *Lower Cafe* is divided into but Fifty six *Boxes*, and those of four different sizes (as you may see in the Figure) by the Frame and Black streight Lines representing the several Partitions. The manner how the several sorts of *Letters* are disposed in the several *Boxes*, is called, *Laying of the Cafe*, where in the *Upper Cafe* you see *Capital*:

*Capital A* Ly in the uppermost *Box* on the Left hand, B C D E F G succeeding it in that Row to the Right hand; as far as the broad Partition in the middle of the *Cafe*; under *Capital A* lies *Capital H*, I K L M N O orderly succeeding it to the right hand, as far as the great Partition in the middle of the *Cafe*: But the Figure being plain, I refer you to it.

The *Lower Cafe* is not devided according to an orderly succession of the *Alphabet*, in Ranks; for those *Letters* that are most used are laid in the biggest *Boxes*, about the middle of the *Cafe*, That the *Compositers* hand may have the quicker access to them. See the Figure.

## ¶ 2. *Of Rincing a Form of Letter, in order to Describing it.*

After the *Press-man* has *Wash'd a Form*, he brings it to the *Rincing-Trough*, and rears it a little a-slope on one of the ends of the *Chase*, either against a convenient place of the *Frame* of the *Rincing-Trough*, or towards the Wall; for so plac'd, the *Face of the Letter* runs less hazzard of receiving dammage, and the *Form* stands in a proper position for the *Compositer* to rear a *Letter-board* against the backside of it.

The *Compositer* therefore brings a *Letter-board*, and puts the *Face* of it against the back-side of the *Form*, and draws *Form* and *Letter-board* toward him, leaning them against his Knee till he can conveniently grasp about the middle of the sides of the *Chase* and *Letter-board* between his Fingers under the *Board*, and his Thumb upon the *Chase* and *Furniture*: And



if the *Form* be not too heavy, in this position he lifts it up to the *Rincing-Trough*; but if it be too heavy, as most commonly it is, He lifts it up in this position till he brings the upper edge of one of the long sides of the *Letter-board* to rest between his Belly and Stomach, and then sets *Letter board Form* and all in the *Rincing-Trough*, letting the hither side of the *Board* rest upon the hither Ledge of the *Rincing-Trough*, that the *Form* may tilt downwards.

When it is on the *Rincing Trough*, he gets the *Mallet* and *Shooting-stick*, and holding the *Mallet* in his Right hand, and the *Shooting-stick* in his Left, he places the Foot of the *Shooting-stick* (that is the thin end of it) against the narrow ends of each *Quoin*, and knocking with the *Mallet* upon the *Head* of the *Shooting-stick* as gently as he can to drive them back, he loosens every *Quoin*; and this is call'd *Opening of the Quoins*, *Unlocking of the Quoins*, *Opening of the Form*, and *Unlocking of the Form*.

But in the *Unlocking of the Form*, he observes these three Circumstances:

*First*, He begins at the *Foot-Quoins* of a *Quarter*, and loosens them; then with his Fingers and Thumb he puts them up again pretty stiff; yet not so stiff, but that he can again with his Fingers and Thumb loosen them.

The Reason why he opens the *Foot-Quoins* first, is, because the *Letter* is less subject to *Squabble* between *Line* and *Line* (that is *Head* and *Foot*, the length of the *Page*) than it is between side and side (the breadth of the *Page*): For all the *Letters* of a *Line* being of the same *Body*, are all of the same size

in

in their parallel bounds; and the two sides of the *Letter* being generally considerably broader than the Thickness of the *Letter*, are held by their breadth and flatness faster and closer together in a motion towards the *Head* or *Foot* of the *Page*, than they are a-thwart the *Lines*, there being generally many thin *Letters* and *Spaces* in a *Line*, whose thickness is very little considerable to their *Body* or parallel bounds: So that if the *Form* be loose, those Thin *Letters* and *Spaces* not having a Thickness proportionable to their *Body* to keep them in their proper Square, their Thin Edges twist them about; and one *Letter* very seldom twists alone, but forces many others (perhaps in some *Lines* above and below it, and on each side of it) out of its square position.

But the *Foot-Quoin* being thrust up again with the Fingers, that the *Lines* may joyn again after they were knock'd open with the *Mallet* and *Shooting-stick*, make the Thin *Letters* in the *Lines* less subject to *Squabble* (as not having the room to twist about) because *Opening* the *Foot-Quoins* afterwards with the Fingers, offers less violence than the smart knock of a *Mallet*.

*Secondly*, He holds the *Shooting-stick* much aslant to the *Letter-board*, so as the Foot of it touch not the Face of the *Letter-board*, lest with knocking upon the *Shooting-stick* (it being hard Wood, and the grain running downwards) the Foot should batter and spoil the Face of the *Letter-board*.

*Thirdly*, He *Unlocks* the outermost, viz. the broadest *Quoins* first, and then with his Fingers thrusts them pretty close up again, unless the *Form* he *Un-*  
lock

*lock* be a great *Letter*, for then he observes not this Circumstance so nicely; then the other *Quoin*, or (according to the bigness of the *Form*) *Quoins*.

Having *Unlock'd* the *Foot Quoins*, he *Unlocks* the *Side Quoins* in the same manner and order; and being provided with a Pail, or a great Pan full of fair Water, and a *Wooden Dish*; he takes a Dish full of fair Water, or more, if the *Form* require it, and throws it upon the *Form*, till he have so well wetted it, that the Water may sink between the *Letters* in the *Form*, to hold and keep every *Letter* contiguous to its next.

Then he *Opens* the *Quoins* pretty loose, the *Foot Quoins* first, and in *Opening* them he considers the *Body* of the *Letter*, whether it be Great or Small, and accordingly he *Opens* them; for at the *Foot* he *Opens* them about the thickness of the *Body* of the *Letter*: But on the *Sides* not above half the *Body*.

By *Opening*, you must now understand removing the *Quoins*, till they stand loose, or distant from the *Furniture*, the *Body*, or half the *Body* of the *Letter*.

He *Opens* but one *Quarter* at a time, viz. one of the hithermost *Quarters*, till he have well *Rinc'd* that, which when he has done, with his Fingers he thrusts the *Quoins* of that *Quarter* stiff up again, aswell that it may be the less subject to *Squabble* or *Break*, as that the Water may the better be squeezed out from between the *Letter*; when he comes to *Distribute* it.

Having thus *Opened* the *Quoins*, He also *Opens* the *Furniture*, viz. the *Head sticks*, and the *Inner Side-sticks* and *Gutter-sticks*, if the *Form* have any, to make himself the more room to *Open* the *Letter*: The Balls of the three first Fingers of each Hand he places  
near

near the ends of the *Head-stick*, and *Opens* it by taking as good hold as he can of so much of it as stands above the *Cross* of the *Chase*, drawing the *Head-stick* towards him about half the *Body* of the *Letter*. And in the like manner he *Opens* the inner *Side-sticks*, but draws them towards him about a quarter of the *Body* of the *Letter*. Yet sometimes this Office is not perform'd with the three Fore-fingers of each Hand, but with the two Thumbs; and this is when the *Quarter* of *Letter* stands between the *Head* or *Side-sticks*, and then he places his two Thumbs near the ends of the *Sticks*, as before he did his Fingers, and thrusts the *Sticks*, *Letter* and all, from him.

And having *Opened* the *Quoins* and *Furniture* of one *Quarter*, he also *Opens* the *Letter*, that it may receive the Water more plentifully: He *Opens* the *Letter*, by fixing the Balls of his Fingers of both his Hands upon the *Face*, and so thrusting and joggling it from him, and drawing it towards him from *Head* to *Foot*, and from *Side* to *Side*, and then throws a good Dish full or two of Water upon it, and with the Balls of his Fingers still rubs upon the *Face* of the *Letter*, that by shaking and joggling the *Letter*, the Water (e're it sink through the *Letter*) may the better *Rince* away that *Ly* that by the *Pressmans* washing soak'd into it: And this joggling the *Letter*, and throwing on fresh Water he continues till the Water that spurts out from between the *Letters* by this joggling, be as clear as it was when it was thrown on, and then, and not till then, he knows his *Quarter* is well *Rinc'd*: Then with his two Thumbs, one

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placed

placed on the side of the *Foot-stick* and the other on the side of the *Side-stick*, as near as he can, he thrusts both at once towards their opposite *Cross*, and so thrusts the *Letter* and *Furniture* close up again: And that the *Letter* may not be in danger of *Squabbling* or *Breaking*, he thrusts the *Quoins* loosely up again also.

As he *Open'd* and *Rinc'd* this first *Quarter*, he *Opens* and *Rinces* the others.

The reason why he *Opens* and *Rinces* the hithermost *Quarter* first, is, because the Water that descends from the hithermost *Quarters* does in a degree help to *Rince* the nethermost also.

Having thus *Rinc'd* the whole *Form*, and with his *Fingers* shut it up again, he lets it stand a little while to drain; then grasping the two ends of the *Letter-board* a little beyond the middle, with his *Fingers* underneath, and the *Thumb-balls* of his two *Hands* upon it, he sets one side of the *Letter-board* against the bottom of his *Stomach*, and carries *Letter-board*, *Form*, and all to the *Distributing Frame*.

Then he falls to *Stripping* of one *Quarter* first: Taking the *Quoins* quite out, and laying them upon the *Face* of the *Letter*, either on the same or another *Quarter* (if he *Strips* but one *Quarter* at once) with their ends standing the same way they stood in the *Chase*, and in the same order of succession; then he removes the *Side* and *Foot-sticks* to their respective sides, close to the inside of the *Chase*, and again removes the *Quoins*, laying them in the same order he laid them upon the *Face* of the *Letter*, upon the upper sides of the *Side* and *Foot-sticks*, and *Chase*; then



then, as I told you before, how he *Opened* the Inner *Side-sticks*, just so again he not only opens them, but by the *Side* and *Head-sticks* he draws or slides the *Letter* from the *Crosses*, that he easily takes them out if he pleases; or if he have room enough to come at the *Letter* without, he lets them stay in.

Thus the first *Quarter* is *Stript*, and so the other *Quarters* successively, in order to be *Destributed*.

### ¶ 3. Of Destributing.

The *Compositer* seeks among the *Furniture* for a *Riglet*, a little longer (about a *Pica* or *Englisb*) than the *Line* of the *Page* he is to *Destribute*; or else he cuts a *Riglet* to that length (this *Riglet* is called a *Destributing-stick*) and coming to his *Stript Form*, or *Quarter* of the *Form* he is to *Destribute*, he places one flat side of the *Riglet* against the Head of the *Page*, and claps the Balls of his two Fore-fingers behind it, and the inner Joints (next his Fore-fingers) of his middle Fingers he claps against the ends of so many *Lines* as he intends to *Take up*, supposing it *Pica*, about Seven; and presses them pretty close to the sides of the *Lines*: Then with the ends of the Balls of his two Thumbs he parts that number of *Lines* from the rest of the *Page*, by pressing gently towards his *Riglet* or *Destributing-stick* upon the Face of the *Letter* of the farthest *Line*, which, if the Joints of his middle Fingers press pretty hard towards each other at first, easily part, and he may open that number of *Lines* so far from the rest of the *Page*, that he may get the Balls of his Thumbs

far enough upon the shank of the *Letter*: So that the pressing the *Lines* yet a little harder between the Joints of his middle Fingers, and pinching with his Thumbs the *Letter* hard against the *Riglet*, with a quick jerk he rears that *Taking-up* upon his *Distributing-stick*. See Plate 23. at A.

Having it upon his *Distributing-stick* between both his Hands, with the *Face* of the *Letter* from him, he disengages his middle Fingers, and with his fore Fingers and Thumbs holding the *Riglet*, and now the Top of his *Taking-up* pretty loosely between them, he turns ( as on two moving Axises ) the ends of the *Lines* that were towards his Right Hand, and guides them to the Thumb-ball of his Left Hand: Thus the *Face* of the *Letter* is turn'd towards him; then bowing the inner Joynt of the middle Finger of his Left Hand ( which before prest the left side of the *Line* ) under the middle of the *Riglet* he takes the weight of the *Taking-up* upon it, which yet he eases as he lifts, by mounting the now Right Hand end of the *Lines* a little above an Horizontal level, and depressing the Left Hand ends a little below; so that now he has his *Taking up* in his Hand, with the *Face* of his *Letter* towards him, and the *Notches* upwards, he goes with it to his *Casse*, and places himself against the middle of it. See Plate 23. at B.

Then clapping the Ball ( or if he will take off more than the length of the Ball ) of his middle Finger of his Right Hand, of the second Joint of that Finger, against the bottom of the uppermost *Line* of his *Taking up* towards his Right Hand, and his fore Finger about the middle of the shank of the *Letter*,  
he:

he slides or draws towards him about an Inch or an Inch and an half of that *Line* upon the Ball of his Thumb, which is placed at the *Face* of the *Letter* to receive it : And as it comes off the *Taking up*, he with his aforesaid two Fingers and Thumb disposes it so among his Fingers that he gathers the Ball of his fourth Finger under the bottom of the *Letter*, and then he brings what he has taken off towards his Sight to read ; then with a sleight thrusting the Ball of his Thumb outwards, and drawing inwards the Balls of his fore and middle Fingers, he spreads and *Squabbles* the shanks of the *Letters* between his Fingers askew ; and remembering what *Letters* he read, he nimbly addresses his Hand with a continued motion to every respective *Box*, which his Fingers, as they pass by, lets a *Letter* drop into, till his *Taking off* be quite *Destributed*.

Having *Destributed* that *Taking off* he makes another *Taking off* as before, and so continues his *Takings off* till his whole *Taking up* be *Distributed* : And thus he *Takes up* and *Destributes* till his *Case* is full.

If the *Form* were not well *Rinc'd*, the shanks of of the *Letters* will be more or less slippery, and with long *Destributing* will make the Balls of the Fingers and Thumb supple, by the wetness of the *Letter* and sharpness of the *Ly* ; and consequently the grain of the skin will be made clumsy, and those Joints feeble ; so that they will not so well fasten upon the sides of the Shank to command the *Letter*, and draw it askew, or be so nimble at disposing them into their several *Boxes*.

This

This happens most if they work upon small *Letter*, and that old, and the *Ly* old too, for then the *Ly* will have much *Inck* mingled in it: And the *Compositer* will have much ado to *Rince* his *Form* so clean but that the *Letter* will be slippery, and consequently not spread, as aforesaid. But against it they may use a remedy, which is, to have a piece of Allom about the bigness of a Hasel-nut, lye in one of the *Boxes* of the *Cafe*; for by feeling that now and then, the dilated pores of their *Fingers* are again contracted, and fit to do their office: For by the greasiness of the *Letter*, the grain of the *Skin* of the *Fingers* were so dilated, that the *Compositer* could not so actively draw the *Shanks* of the *Letters* askew, as aforesaid.

The *Compositer*, if conveniences suit, chuses to *Destribute* his *Letter* over Night, that he may have a *dry Cafe* (as he calls it) to work at in the Morning, because *Wet Letters* are not so ready and pleasant to pick up as *Dry*; and besides are apt to make the *Fingers* sore, especially if the *Ly* be not so well *Rinc'd* from the *Letter* as it should be. In the Winter, when he *Destributes* in the Day time, he commonly brings the *Lower Cafe*, when full of *Letter*, to the Fire to dry, rearing the farther side of the *Cafe* a little upwards: And when it is well dried, he sets it again upon the *Frame*.

## ¶ 14. Of Composing.

The *Compositer* now addresses himself to *Composing*: And looking a little over his *Copy*, to see how it pleases him, for he runs different fortunes, either of good or bad *Copy*, viz. well or ill writ, if it be a *Written Copy*, or much *Italick*, *Latin* or *Greek*, or *Marginal Notes*, or few *Breaks*, &c. for this he likes not in his *Copy*: But a *Printed Copy*, or a fair *Written Hand*, and full of *Breaks* pleases him well, and is by *Compositers* call'd *Good Copy*, *Light*, *Easie Work*; when the former they call *Bad*, *Heavy*, *Hard Work*: And if a *Price* be already made for a whole *Book*, the Good and Bad is done at the same *Price*.

If the *Measure* be already made, that is, if he was already upon that *Work* before, and his *Composing-stick* be set to the *Measure* of that *Work*, he needs not, or must nor alter his *Composing-stick*: But if his *Measure* be not made, he must unskrew the *Skrew* of his *Composing-stick*, and slide the *Cheeks* nearer to, or farther off the *Head* of his *Composing-stick*, till he have exactly fitted his given *Measure*.

If it be a *Printed Copy* he is to *Work* on, and his *Work* must run *Line for Line* with his *Copy*, he then without more ado, *Sets* or *Composes* the fullest *Line* he finds in his *Copy*, and slides up the *Cheeks* of his *Composing-stick*, and pinches that *Line* between the *Cheeks* and the *Head*, till it stands as stiff or hard in the *Stick* as he intends to *Justifie* all the rest of his *Lines*: Then screws up the *Composing-stick*.

*Justi-*



*Justifying* (in *Compositers* Language) is the stiff or loose filling of his *Stick*, for if it be fill'd very stiff with *Letters* or *Spaces*, they say it is *hard Justified*, if loosely, they say it is *loose Justified*.

Having the *Measure* fitted, he places the *Galley* on his *Upper Case* on the Right Hand, for those *Boxes* are seldome used, because in them are placed only the *Latin sorts*, or sometimes the *Small Capitals*, *Astronomical Signs*, &c.

He places his *Galley* so, that the Left Hand corner of the bottom of its Frame stands lower upon the *Case* than any of the other Corners, for in that position the *Letters* at the end of every *Line* stand safest from falling, as leaning towards the rest of the *Page*.

Some *Compositers* use *Visorums*, as is described in *Plate 2.* at i. Therefore pricking the point of the *Visorum* most commonly upon the Border or Frame of the *Case* on the Left Hand about the *G-Box*, they fold the *Leaf* of *Copy* they *Compose* by, so as the bottom of it may rest upon the Square-Shoulder near the bottom of the *Visorum*; then with two pieces of *Scaboard* tyed together at one end, they clasp both the *Copy* and *Visorum* between these two *Scaboards*, which two *Scaboards* pinch the *Copy* and *Visorum* fast enough to keep the *Copy* in its place, and at the same time also serves for an *Index* to direct the Eye to every *Line*, as the *Compositer* moves it downward.

After this preparation, the *Compositer* falls to *Composing*. But first reads so much of his *Copy* as he thinks he can retain in his memory till he have *Composed* it, as commonly is five or six words, or sometimes a longer Sentence. And having read, he falls

falls a Spelling in his mind ; yet so, that his Thoughts run no faster than his Fingers: For as he spells A, he takes up A out of the A Box, as he names n in his thoughts, he takes up n out of the n Box, as he names d in his thoughts he takes up d out of the d Box ; which three Letters set together make a Word, viz. And; so that after the d he sets a Space : Then he goes on to the next Word, and so Composes on, Setting a Space after every Word till the Words come to the end of the Line, for then he sets no Space.

When he Composes the Letters he holds the Composing-stick in his Left Hand, placing the Second Joynt of his Thumb over the moving Cheek of the Stick, and the end of the Ball of his Thumb reaches down to the bottom of the Cheek and Stick ; so that with the end of the Ball of his Thumb he gently presses the Letter close to the Cheek, and keeps the Letters tight and square together, as he places them in the Stick successively. See Plate 24. at A.

And as his Eyes are very quick in reading his Copy, and in shifting its Visual Ray to the several Boxes he is to have a Letter out of, so is his choice what Letter to take up very sudden ; for though the Box be full of Letters, yet in an instant he resolves and pitches his Fingers upon that one, which for its posture and position his Fancy reckons lyes most commodious for his immediate seizing. For position, he generally chuses that which lies uppermost, because it is readiest at Hand to snatch up : And for posture, that which lies with its Face towards his Right Hand, because catching at the Letter near the Face-end of the Shank, he by an accustomed sleight, in his Fingers

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while

while it is coming to the *Stick*, disposes it so, that as the bottom of the Shank goes directly forwards, towards the bottom of the *Stick*, so the *Natch* of the *Letter* shall also be placed upwards.

Most *Compositers* use a *Composing-Rule*, which is only a piece of a *Brass-Rule* cut to the length of the *Measure*, with a small Ear left at either end, to take it out by when the *Line* is full, and to lay it upon the *Compos'd Line*, to *Set* successively a succession of *Lines* upon, till the *Stick* be full.

This *Rule* is very commodious to Work with, because the *Letter* slides easier and smoother down to the *Back* of the *Stick*, than it will upon a *Line* of *Letters*: Besides, the *Letters Compos'd* on it stand streighter and truer in *Line*, and are less subject to *Hang*, than those *Compos'd* on a *Line* of *Matter*; unless with a *Riglet* (as that they many times do) they rub pretty strongly along the *Line* they have *Compos'd*, which is a labour more than needs, and the loss of some time to make the Work more unpleasant.

Having *Compos'd* one *Line*, if it ends with a *Word* or a *Syllable* and a *Divison*, and just fill the *Measure*, it needs no more *Justifying*; but if the *Line* conclude not as aforesaid, then he puts a *Space* more between every Word, or so many Words as will fill up the *Measure* pretty stiff, viz. *Justifie* the *Line*. But if the *Line* be not yet *Justified*, he puts another *Space* between every Word, or between several Words, till the *Line* be *Justified*: So that here is now three *Spaces*, and strictly, good Workmanship will not allow more, unless the *Measure* be so short, that by  
reason

reason of few *Words* in a *Line*, necessity compells him to put more *Spaces* between the *Words*. This often happens in *Marginal Notes*, where the *White* between *Words* is often as great or greater than between *Line* and *Line*.

These wide *Whites* are by *Compositors* (in way of Scandal) call'd *Pidgeon-holes*, and are by none accounted good Workmanship, unless in such cases of necessity, as aforesaid.

And as *Lines* may be too much *Spaced-out*, so may they be too close *Set*: It may be accounted too close *Set* when only a *Thin-space* is set between *Words*, especially if no *Capital Letter* follows the *Thin-space* or *Point* go before it. *Thin-spaces* being intended and *Cast* only that the *Compositor* may *Justifie* his *Lines* the Truer, and not to serve for convenient distinction between *Words*; yet do some *Compositors* too often commit this error, rather than put themselves to the trouble of *Spacing* out a *Line*, where many *Spaces* must be used to *Space* it out.

A good *Compositor* takes care not to *Set* too Close, or too Wide; for if he *Set* too Close, and should happen to leave out a *Word* or two, it will give him a great deal of trouble to get those *Words* in; Nay perhaps when he comes to a *Break* he drives out a *Line*, for which *Line* perchance he may be forc'd to *Over-run* all the *Pages* that are *Set* forwards upon that *Matter*. And if he *Sets* too Wide, and he chance to *Set* a *Word* or two twice over, he may be forc'd to make *Pidgeon-holes* e're he come to a *Break*, and then perhaps his *Break* is got in too, and his *Page* a *Line* too short, and he forc'd to *Over-run* several

ral Pages e're he can drive that *Line* out. As I shall farther shew you when I come to the ¶ of *Correcting*.

In *Justifying* his *Line* he takes great care that it do not *Hang* : It is an unproper Term, yet grown into Use, for when the *Letter* stands askew, and not directly Square, they say it *Hangs*. New *Letter* is most subject to *Hang*, especially if not very smoothly *Drest*; Because the least Bur, or sharpness of its Angles, may catch in the Burs or Angles of the *Letters* that stand next them, and so make them stand aslope, and one *Letter* standing aslope is very subject to make all the other *Letters* in that *Line* stand aslope too. Therefore if he find his *Letter Hang*, while his *Line* is yet loose, viz. Unjustified, he gently with the Ball of the Thumb of his Left Hand, thrusts the top of the shank of the *Line* where it *Hangs*, moving the *Letter* somewhat from him, towards the farther end of the *Stick*, and with the Balls of the two Fore-fingers of his Right Hand pats upon the *Face* of the *Letter*, till he have got them into an upright position. He moves or drives the top of the Shank of the *Letter* from him, because generally the placing the Ball of his Thumb on the top of the shank of the *Letter* when he *Composes* (as was shewn before) is subject to draw the *Letter* askew towards him, but that his care commonly prevents it: Yet if by chance the *Line* should *Hang* from him, then he with the Ball of his Thumb as aforesaid, draws the *Letter* towards him, to set it upright.

Here



Here is now one *Line Compos'd*: And as he *Compos'd* that *Line*, so he *Composes Line* upon *Line* till his *Stick* be full: When his *Stick* is full, he *Empties* thus; He lays his *Stick* down upon his *Lower Case*, with the bottom of his *Stick* against the hither *Ledge* of the *Case*, and the *Face* of the *Letter* upwards; being provided of a *Riglet* just the Length of his *Line*, he lays his *Riglet* against his last *Line*, and places the Balls of his two Fore-fingers behind the *Riglet*, near the middle of it, if the *Line* be not too long, and then only as near the middle as he can to command it with his Fore-fingers; and he places the Balls of his Thumbs against the first *Line* in his *Stick* as far below the *Face* of the *Letter* as he can, and he places first the Joints of his middle-fingers against the Sides of the *Letter* at the two ends of the *Line*, so as I shewed you he did when he was *Taking up* his *Letter* to *Distribute* it; and in this posture pinching the *Letter* between his Thumbs and his Fore-fingers, and squeezing his two middle fingers towards each other, he leans the *Letter* in the *Stick* almost flat upon the *Riglet*: But if his *Lines* were *Hard Justified*, he cannot perhaps with the first leaning the *Letter* back get them clear out of the *Stick*, therefore he again wriggles the *Stick* of *Letter* forwards and backwards, till he gets them quite out. See Plate 24. at B.

Having gotten them out, and in this posture fast between his Thumbs and Fingers, and the *Letter* leaning almost flat upon his *Riglet*, he directs both his hands together to his *Galley*, and nimbly claps that *Stick* of *Letter* down into the *Galley*; placing the

first *Line* close and upright against the lower ledge of the *Galley*, and the begining of his *Lines* close and upright against the left hand *Ledge* of the *Galley*, and then disingages his *Fingers* and *Thumbs*, and leaves his *Riglet* standing in its place till he have occasion to use it in like manner for the next *Stick of Letter*.

As he *Set* this *Stick of Letter*, so he *Sets* on till his *Page* is *Out*, Remembring after the last *Line* of every *Page* to set a *Direction*: That is, he *Sets* a *Line* of *Quadrats* and at the end of it the first word of the next *Page*, or if the *Word* be very long and the *Line* very short, two *Syllables*, or sometimes but one of that *Word*. And if it be the *First Page*, viz. the first *Page* of that *Sheet*, he *Sets* a *Signature* about the middle of the *Line*, or rather a small matter nearer the end than the middle is, (because when the *Sheets* are wrought off and gather'd, they *Collation* something quicker: The *Collationer* not being forced to prick up with his *Bodkin* the corners of the *Sheet* so high to see the *Signature*: which in a long train of work saves time.

If it be the *First Page* of the first *Sheet* of a *Book* the *Signature* is *A*, if the first of the second *Sheet* *B*, if the first of the third *C*, and so successively till he come to *W*, which is always skipt, because the *Latin Alphabet* has not that *Letter* in it; but next *V* follows *XYZ*, so that if the *Book* contain above three and twenty *Sheets*, the *Signature* of the four and twentieth *Sheet* must be *A a*, if five and twenty *B b*; till in like manner he run through the *Second Alphabet*, and comes to the third, fourth, &c. still as he begins a new *Alphabet* adding an *a*.

To

To the second *Page*, or any other *Even Page*, he *Sets* no *Signature*, but to the Third which is an *Odd Page* he does, viz. A 2. The *Figure* of 2 is no part of the *Signature*, but is only an adjunct to shew the *Book-binder* the Second *Leaf* of that *Sheet*, that he may the surer *Fold* the *Sheet* right.

If it be a *Folio Sheet* he cannot set A 3 in a single *Sheet*, because it has but two *Odd Pages* in it ; but if they be *Quir'd Sheets*, that is, two, three, or four *Sheets Quir'd* together, he must set A 3 in a *Folio*, though not in the First, but Third *Sheet* of that *Quire*. But no wise *Compositer*, except he work on *Printed Copy* that runs *Sheet* for *Sheet*, will be willing to *Compose* more *Sheets* to a *Quire* than he shall have a *Fount* of *Letter* large enough to set out, unless he will take upon him the trouble of *Counting off* his *Copy*: because he cannot *Impose* till he has *Set* to the last *Page* of that *Quire*; all the other *Sheets* being *Quired* within the first *Sheet*, and the last *Page* of the *Quire* comes in the first *Sheet*. But when he *Composes Quir'd Work*, the *Signature* of the first *Page* is A, the *Signature* of the *Sheet Quir'd* next within the first *Sheet* is A 2, the first *Page* of the next *Quir'd Sheet* A 3 : So that the *Signatures* of all the *Sheets* in the first *Quire* is A, A 2, A 3, &c. according to the number of *Sheets Quired* together. The second *Quire* begins B, B 2, B 3, &c. The Third *Sheet* C, &c. according to the number of *Quires*. This is called *Printing in Quires*. Now to return.

If the *Form* be *Quarto*, he *Sets* under the Fifth *Page Signature* 3. If *Octavo*, he sets also under the Fifth *Page Signature* 3. and under the Seventh *Page*  
Signa-

*Signature 4.* If *Twelves*, he sets also under the *Fifth Page Signature 3*, and under the *Seventh Page Signature 4*, and under the *Ninth Page Signature 5*, and under the *Eleventh Page Signature 6*. The Rule is, that all *Odd Pages* should have a *Signature*, if they stand on the *Out-side* of the *Sheet*; and the reason for the Rule is, that the *Gatherer*, *Collater* and *Book-binder* may the readier lay *Sheets* right, if they be turned wrong. This Rule is not among *Compositers* so well observed as it ought to be: For in *Quarto's* they not only leave the *Signature 4* out, but rarely put in *Signature 3*.

¶ 5. *Some Circumstances a good Compositer considers and observes in Composing.*

A good *Compositer* is ambitious as well to make the meaning of his *Author* intelligent to the *Reader*, as to make his Work shew graceful to the Eye, and pleasant in Reading: Therefore if his *Copy* be Written in a Language he understands, he reads his *Copy* with consideration; that so he may get himself into the meaning of the *Author*, and consequently considers how to order his Work the better both in the *Title Page*, and in the matter of the *Book*: As how to make his *Indenting*, *Pointing*, *Breaking*, *Italicking*, &c. the better sympathize with the *Authors* Genius, and also with the capacity of the *Reader*.

Nor does a *Compositer* the least shew his skill in the well ordering and humouring of a *Title Page*, which, because it is the first *Page* of a *Book*, we shall begin the *Compositers* Considerations at.

He

He, as aforefaid, judiciously reads his *Title Page*, and confiders what *Word* or *Words* have the greateſt Emphaſis in it. If many *Words* precede the Emphaſis, he confiders whether it be beſt to make one or two *Lines*, or more of them, by electing a *Body* bigger or leſs to *Set* the precedent *Matter* in, and whether any of theſe *Lines* ought to be *Indented*, either at one end or both, viz. *Set* in the middle of the *Line*. And what *Words* of Emphaſis come in that precedent *Matter*; that he may *Set* them either in *Capitals*, *Roman*, *Italick*, or *Engliſh*; and at laſt bring the great Emphaſis, which is generally the *Title* or *Name* of the *Book* in a *Line* by it ſelf, and juſt fill it if he can; which he has ſome helps to do, by the great *Bodied Letters* of the *Lower Caſe*, or elſe by *Capitals*, *Roman*, *Italick* or *Engliſh*, of a proper *Body*, which beſt pleaſes his fancy, or is in preſent mode.

If this *Word*, of great Emphaſis be *Set* in the *Lower Caſe*, yet he *Sets* the firſt *Letter* a *Capital*, and he *Sets* no *Space* between *Letter* and *Letter*, but between *Word* and *Word* he does, if there happens more than one *Word* in that *Line*: But if that *Word* be *Set* in *Capitals*, he chuſes to *Set* a *Space* between every *Letter*, and ſometimes he *Sets* two *Spaces*, yet that is rather to drive out the *Line*.

If he *Sets* but one *Space* between the *Letters* in a *Word*, he *Sets* three *Spaces* between *Word* and *Word*: And if he *Set* two *Spaces* between *Letter* and *Letter*, he *Sets* four *Spaces* between *Word* and *Word*, as well to give a graceful appearance to the Eye, as to make a Viſible and proportionable diſtinction between *Word* and *Word*.

H h

He



He also considers what *Whites* to *Set* between his *Lines*; as either a *Line* of *Quadrats*, and of what *Body*; or (if his *Title Page* be large) but a *Scaboard*; and at last *Justifies* his *Page* in *Length*, either by adding more *Whites* (where they may be proper) if his *Page* be too short, or by taking out or diminishing *Whites* if the *Page* be too long: And this he does by altering the *Body* of *Whites*, for if a *White-line* be *English*, he may take it out, and in its room put in *Pica*, *Long-primmer* or *Brevier*, according as he finds he has *Ran out*; yet this he does with Consideration, where more or less *White* is properest.

But the mode of ordering *Titles* varies; as may be seen by comparing the *Title Pages* of every twenty years: Therefore a Lasting Rule cannot be given for the ordering them: only what has been said in general concerning Emphasis, and in particular to humour the Eye, the *Compositer* has a constant regard to.

When he is to Work upon a continued Series of *Matter*, he *Sets* the *Title* of the *Chapter* or *Section* in a bigger *Body* and different Character than his *Matter* is *Set* in; as if the *Matter* be *Set* in *English Roman*, he *Sets* the *Title* in *Great Primer* or *Double Pica Italick*, but the *Words* of *Emphasis* he will *Set* in *Roman*, and varies the Character for them as well in the *Title*, as he does in the *Matter*.

If his *Title* be short, he *Sets* it in the middle of the *Line*, by *Setting Quadrats* on both sides: If his *Title* be long, he *Sets* the middle *Line* in the middle: If it make three or more *Lines*, he *Indents* the first with an *m Quadrat*, and the other with two  
*m Qua-*

*m* *Quadrats*. Before his *Title* he sets a *White-line*, viz. a *Line* of *Quadrats*, and so he does after it ; but with regard to what the bigness of the *Body* of the *Letter* the *Title* is *Set* in, *Runs out* ; for these *Whites* must be set of such *Bodies* (bigger or less) as will make the difference of the *Body* the *Title* is *Set* in, a just number of *Lines* with those of the *Body* the *Matter* is *Set* in, because the length of the *Page*, as aforesaid, must be *Justified*. And he always forecasts to put rather more than less *White* before the *Title* than after it ; because the *Title* has relation to the *Matter* of the *Chapter* or *Section* it is *Set* to, and therefore ought not to be so distinct, as from the precedent *Chapter* or *Section*.

After his *Title*, he begins his *Chapter* or *Section* with a *Two-lin'd Letter*, or *Three* or *Four-lin'd Letter*, but *Indents* it not. He begins his *Chapter* or *Section* with the first *Line* in the *Stick*, unless his *Stick* be very Deep, or his *Two* or *Three-lin'd Letter* small, because it may else reach above the top of the *Stick*, and so hinder him from filling up *Lines* to the *Body* of the *Two* or *Three-lin'd Letter*.

After the *Two* or *Three-lin'd Letter*, he *Sets* a *Capital Letter* of the *Body* his *Matter* is of, and *Indents* all, those *Lines* that are to fill up the *Great Letter* with an *n* *Quadrat*.

He cannot use his *Composing-Rule* (mentioned in the foregoing part of this ¶) till he have filled up *Lines* to the *Body* of the said *Great Letter* ; because his *Composing-Rule* is too long to go between the *Great Letter* and the *Head* of the *Stick* : but then he uses the end of a *Riglet* to rub along the *Lines* he

has *Composed* to smoothen them, and so *Set* on till he has filled up the whole *Body* of the *Great Letter*, and most times somewhat above it; which *Letter* he afterwards *Justifies* with *Small Bodied Quadrats*, or with *Scaboards* or *Cards*; or with any or all of them till the *Great-letter* stands even with the number of *Lines* that it *Indents*, and afterwards uses his *Composing Rule*, and *Sets* the succeeding *Lines* to their full Length.

If it be a great *Wooden Letter*, he begins his *Chapter* or *Section* with, it is most times too *Deep* for the height of the *Cheeks* of his *Stick*; therefore he *Justifies* his *Stick*-full just to the breadth of the *Wooden Letter* with *Quadrats* or *Quotations*, and *Sets* on between those *Quadrats* or *Quotations* and the *Head* of his *Stick*, as I shewed before, till his *Stick* be full of *Lines*; which *Lines* he *Empties*, leaving the *Quadrats* or *Quotations* in his *Stick*, to serve, as before, for the succeeding *Stick* or *Sticks*, till he have *Composed Lines* enough for the *Depth* of the *Wooden Letter*.

As he *Sets* on, he considers how to *Point* his *Work*, viz. when to *Set*, where; where: and where. where to make ( ) where [ ] ? ! and when a *Break*. But the Rules for these having been taught in many School-books, I need say nothing to them here, but refer you to them.

And as he considers how to *Point*, so he considers what proper Names, either of Persons or Places, he meets with in his *Copy*, as also what Words of great Emphasis, and what Words of smaller Emphasis, what Obsolete Words, and what Foreign, &c.

When

When he meets with proper Names of Persons or Places he *Sets* them in *Italick*, if the Series of his *Matter* be *Set* in *Roman*; or in *Roman* if the Series of his *Matter* be *Set* in *Italick*, and *Sets* the first *Letter* with a *Capital*, or as the Person or Place he finds the purpose of the Author to dignifie, all *Capitals*; but then, if conveniently he can, he will *Set* a *Space* between every *Letter*, and two or three before and after that Name, to make it shew more Graceful and Stately. For *Capitals* express Dignity where-ever they are *Set*, and *Space* and *Distance* also implies stateliness.

*Words* of great *Emphasis* are also *Set* in *Italick*, and sometimes begin with a *Capital Letter*: If the *Emphasis* bear hard upon the Word to be express'd as well as the Thing to be express'd, it ought to begin with a *Capital*. I shall bring for instance an Observation I made above forty years ago on the Word *that*, viz. that that Word may be reiterated five times, and make good Sense: If it be set thus it will seem nonsense, that that that that that; but if it be *Set* thus, that that That that that Man would have stand at the beginning of the *Line* should stand at the end; it will, by toning and laying *Emphasis* on the middlemost That become good Sense. Now all the thats ought to be *Set* in *Italick*, and the middlemost That ought to begin with a *Capital*, because it is both the Thing and Word.

Words of a smaller *Emphasis* may be *Set* in the running Character, viz. *Roman*, if it be the Series of the *Matter*; or *Italick*, if *Italick*, but begun with a *Capital*: Instance in the last Sentence, That which expresses both the Thing and Word, &c. Here Thing and Word

both bear Emphasis, though not very great, and therefore ought to be dignified more than those Words that precede or follow those Words. Yet I know some Authors are now so nice to mark both the Word Thing and the Word Word in *Italick*.

After a . though not at the end of a *Break* he begins with a *Capital*.

When in *Composing* he comes near a *Break*, he for some *Lines* before he comes to it considers whether that *Break* will end with some reasonable *White*; If he finds it will, he is pleas'd, but if he finds he shall have but a little single *Word* in his *Break*, he either *Sets* wide to drive a *Word* or two more into the *Break-line*, or else he *Sets* close to get in that little *Word*, because a *Line* with only a little *Word* in it, shews almost like a *White-line*, which unless it be properly plac'd, is not pleasing to a curious Eye.

Nor do good *Compositers* account it good Workmanship to begin a *Page* with a *Break-line*, unless it be a very short *Break*, and cannot be gotten in in the foregoing *Page*; but if it be a long *Break*, he will let it be the *Direction-line* of the fore-going *Page*, and *Set* his *Direction* at the end of it.

*Indenting* after a *Break* (unless it be the end of a *Chapter* or *Section*) is an m *Quadrat*, (more or less is not proper) *Set* at the beginning of the *Line*: But when Verses are *Indented*, two, three or four m *Quadrats* are used, according to the number of the Feet of the Verses, but most times according to the fancy of the Author.

*English* obsolete Words he *Sets* in the *English* Character,



acter, the first *Letter*, if the dignity of the Word require it, as aforesaid, with a *Capital*.

Foreign Languages he meets with in his *Copy*, if the *Master Printer* have them in his House, he *Sets* them in the proper Character; if not, the Author must write them in the common Character, and the *Compositor Sets* them as they are written.

That I may be the less unintelligent to the Reader, I will inform him that in *Printers Dialect* (as in this last Paragraph it is used) *Language* is understood *Letter*: For the *Compositor* does say, I shall use a Word or two of *Greek Letter*, or *Hebrew Letter*, or *Saxon Letter*, &c. but I shall use a word or two of *Greek*, a Word or two of *Hebrew*, *Saxon*, &c. so that the Word *Letter*, is in *Compositors Dialect*, understood by naming the *Language*.

If *Indentures* instead of *Marginal Notes* come in a number of *Lines*, he *Indents* his *Stick*, as I shewed you he did for a *Wooden Letter*, leaving a convenient *White* between his *Matter* and *Indenture*, and then again *Indents* his *Stick* to *Set* the *Matter* that comes in those *Indentures*, allowing a reasonable *White* between the Top and the Bottom of his *Indenture*, and then *Justifies* it up to an exact number of *Lines*, as he did the *Wooden Letter*.

If *Marginal Notes* come down the side (or sides; If the *Page* have two Columns) he chuses to *Set* them in on the *Stone*, rather than in his *Galley*; because both his *Page* and *Notes* stand safer, being cloathed with the *Furniture*, than they do when they stand Naked in the *Galley*. Therefore I shall say nothing of *Marginal Notes* till I come to *Imposing*,  
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Some other Circumstances (according as variety of Work does happen) a *Compositer* may meet with; but by what has been said upon this and several other Trades, the Ingenious (as they occur) may easily consider how they are to be performed.

Nor (as afore was hinted) is a *Compositer* bound to all these Circumstances and Punctilio's, because, in a strict sense, the Author is to discharge him of them in his *Copy*: Yet it is necessary the *Compositer's* Judgment should know where the Author has been deficient, that so his care may not suffer such Work to go out of his Hands as may bring Scandal upon himself, and Scandal and prejudice upon the *Master Printer*.

#### ¶ 6. Of Tying up a Page.

We may remember the *Compositer* has yet a *Page* in his *Galley*: This *Page* must be *Tyed up* with a *Packthred Cord*, courser or finer according to the bigness of his *Letter* and *Page*: For *Small Letter*, which rarely is used to great *Pages*, he chuses a fine *Packthred*, strong and limber; but for *great Letter* and *great Pages* a stronger that will better endure hard pulling at: Wherefore he seeks a *Cord* for his purpose, or else takes so much off the whole *Quoil* as will serve his turn, and taking the end on't in his Right Hand, lays that end about an Inch within the *Direction-line*, and a little lower than the middle of the *Shank* of the *Letter*, and holds that end there close with the two Fore-fingers of his Left Hand, then he slides his Right Hand along the  
Cord,

*Cord*, straining it as stiff as he can along the right side of the *Page*, and turns it about the *Head* of the *Page* as close down to the *Ledge* of the *Galley* as he can, and so slides his *Hand* over the *Cord* till he draws it about all the sides of the *Page*: and when he comes to the first end of the *Cord*, he doubles up that end so as it stand above the *Face* of the *Letter*, and whips the *Cord* over that end, that the end may not slip; then he twists part of the remaining *Cord* about his *Right Hand*, and grasping his *Left Hand* *Fingers* about the *Direction* Corner of the *Page*, as well to hold the end of the *Cord* from slipping, as to keep the *Page* tight in its position, with his *Right Hand* he pulls the *Cord* as hard down the side of the *Page* as he can; and keeping the *Cord* straining, whips it again about the *Head* and other sides of the *Page*, and so again about all the sides of the *Page*, keeping it still straining; and always as he comes to the *Right Hand* side of the *Page*, pulling hard, and taking care that it slip not: Having whipt the *Cord* twice about the *Page*, he holding two of his *Left Hand* *Fingers* against the *Direction*-corner upon the *Cord*, that it slip not, with the *Ball* of his *Thumb* of his *Right Hand*, and the *Balls* of his *Fingers* to assist, thrusts against the opposite diagonal corner of the *Page*, and removes it a little from the *Ledges* of the *Galley*, that he may with the *Nail* of the *Thumb* of his *Right Hand* have room to thrust the *Cord* whipt about the *Page*, lower down upon the *Shank* of the *Letter*, (to make room for succeeding whippings of the *Cord*, and then thrusts or draws the *Page* close

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close to the *Ledges* of the *Galley* again; then whips the *Cord* again about the *Page* (as before) till he has whipt it four or five times about the *Page*, taking care that the several whippings lye parallel to each other, not lapping over any of the former whippings.

Having whipt the *Cord* four or five times about the *Page*, he with his *Bodkin* or the corner of a *Brass Rule* (which lies best at hand) fastens the *Cord*, by thrusting a noose of it between the several whippings and the Right Hand side of the *Page*, close up to the *Direction-line*, then draws the lower part of that Noose close up to the very corner of the *Direction-line*, that it may be the better fastned between the *Page* and the Whippings: Then, if his *Cord* be not of a just length, he cuts it off from the rest of the *Quoil*, leaving so much length to it as that the end of it may stand upright an Inch or two above the *Face* of the *Letter*; the reason will shew it self when we come to *Imposing*. Then he removes the *Page* pretty far from the *Ledges* of the *Galley*, to see if the Whippings lye about the middle of the *Shank* of the *Letter*; if they lye too high, as most commonly they do, he thrusts them lower with the Nail or Nails of his Thumbs. Then (if the *Page* be not too broad) he places his Fore or Middle Finger, or both, of his Right Hand on the Right Hand Side of the *Page*, and his Thumb on the Left; and bowing his other Finger or Fingers under the *Head* of the *Page*, he rears up the *Handle-end* of his *Galley* with his Left Hand almost upright, and so discharges the *Galley* of the *Page*, by delivering it upright into his Right Hand. Having his *Page* upright

upright in his Right Hand, at the *Head*, he claps the Fingers of his *Left Hand* about the *Foot* of the *Page*, upon the ends of the *Lines* on the Right Hand Side of the *Page*, and his Thumb on the Left Hand side of the *Page*, with the Palm of his Hands towards the *Face* of the *Letter*, and such Fingers as he can spare bowed under the *Foot* of the *Page*, turning the *Page* with the *Face* of the *Letter* from him, and letting it rest upon the inside of his Fingers, under the Right Hand Side of the *Page*, and so goes with it to the *Correcting-stone*.

But if the *Correcting-stone* be full of *Forms* or other *Letter*, as many times it is, then before he begins to *Tye* up his *Page* he provides a *Sheet* of *Waste Paper*, supposing it a *Quarto Page*, and doubles that *Sheet* in four, and while he has the *Page* upright in that Hand (as aforesaid) he takes that doubled *Sheet* into the Palm of his *Left Hand*, and claps it against the bottom of the *Page*, and turning his *Left Hand* outward, receives the *Page* flat upon the Paper on the Palm of his Hand: Then with his Right Hand grasps the Sides of the *Page* and the Sides of the Paper, which turn up again above the bottom of the *Page*, and sets it on a *Letter Board*, or some other board in a convenient place under his *Cafe*. He places that *Page* on the Left Hand the Board with the *Foot* of the *Page* towards him, that the other *Pages* that are in like manner set on the Board afterwards, may stand by it in an orderly succession against he comes to *Impose* them.

If it be a large *Folio Page*, or a *Broad-side* he has *Tyed up*, he cannot take that into his Hands, because



cause it is too broad for his Grasp ; therefore he carries his *Galley*, *Page* and all to the *Correcting-stone*, and turns the *Handle* of the *Galley* towards him, and taking hold of the *Handle* with his *Right Hand*, he places his *Thumb* and *Ball* of his *Thumb* on his *Left Hand*, against the inside the *Head-ledge* of the *Galley*, to hold it and keep it steady, and by the *Handle* draws the *Slice* with the *Page* upon it, out of the *Galley*, letting the *Slice* rest upon the *Correcting-stone* : Then he thrusts the *Head-end* of the *Slice* so far upon the *Correcting-stone*, that the *Foot* of the *Page* may stand an *Inch* or two within the outer edge of the *Correcting-stone* ; and placing his *Left Hand* against the *Foot* of the *Page*, in the same posture he last plac'd it against the *Head-ledge* of the *Galley*, he draws the *Slice* from under the bottom of the *Page*, and leaves it upon the *Correcting-stone*. See *Plate 25. at A.*

#### ¶ 7. Of Imposing.

*Imposing* is the placing of the *Pages* that belong to a *Sheet*, with the *Chase* and *Furniture* about them, in such an order as when the *Sheet* is wrought off at the *Press*, all the *Pages* may be *Folded* into an orderly succession.

There are four *Volumns* in use that are differently *Imposed*, viz. *Folio*, *Quarto*, *Octavo* and *Twelves*.

The manner of *Imposing* these *Sheets* will be plain-er represented in a *Table* than by many words ; therefore in *Plates 26, 27, 28.* I have given you *Drafts* of each *Volumn*, both *First* and *Second Form*, viz. *White Paper* and *Reteration* ; as you may see noted over each *Form* in the *Plates*. For Example, the two *Forms* in the *Folio Sheet* : In the *First Form*  
you

you may see 1 on the Left Hand and 4 on the Right, which shews that the *First Page* must stand on the *Correcting-stone* on that Hand, and the *Fourth* on the Right Hand, with the *Foot*s of the *Pages* towards you; and so for all the other *Forms*. The number of the *Page* belonging to each *Sheet* is marked in what place it is to stand on the *Stone* in the *Chase*, and the Figures of those Numbers are placed with their *Head* and *Foot* upwards and downwards, as the *Heads* and *Foot*s of the *Pages* must stand in the *Chase*.

The places of these *Pages* for all *Volumns* the *Compo-*  
*siter* has always in his memory, yet has he a help if he remember the places of but the first half of the number of *Pages* of each *Volumn*: For if he knows the place of the first *Page*, the *Page* that stands next it must be that number which makes one more than the number of all the *Pages* in the *Sheet*. For Example, in the *Folio*; next the *First Page* stands the *Fourth Page*, 1 and 4 added makes 5, viz. one more than the number of *Pages* in the whole *Sheet*. See Plate 26. Again, In the *Twelves Volumn* next the *First Page* stands the *Twenty Fourth*, 1 and 24 added makes 25: Next 2 stands 23, which added makes 25, viz. one more than the number of *Pages* in the whole *Sheet*. This is a help, and a certain Rule for placing the *Pages* of any *Volumn*, if he knows but by memory the places of the first half number. See Plate 27. Thus you will find an *Even* and an *Odd Page* stand together.

The other *Volumns*, viz. *Sixteens*, *Twenty-fours*, *Thirty-two's*, are but the *Octavo's* and *Twelves* doubled, or twice doubled and *Imposed* in *Half-Sheets*. For Example, The *Sixteens* is two *Octavo's Imposed*.

on each side the *Short Crofs* ; the *Twenty-fours* is two *Twelves Imposed* on each side the *Long Crofs*, and a *Thirty-two's* is four *Octavo's Imposed* in each *Quarter* of the *Chafe*. And thus they double a *Volumn* as oft as they think fit. But as was said before, they are *Imposed* on each side the *Crofs*, or in each *Quarter* of the *Chafe*, as the *Volumn* that is doubled or re-doubled is *Imposed* in the whole *Chafe*.

In *Half-sheets*, all the *Pages* belonging to the *White Paper* and *Reteration* are *Imposed* in one *Chafe*, and are plac'd, as you see by the *Drafts* (in *Plate 28.*) of *Half-sheet Forms*. So that when a *Sheet* of *Paper* is *Printed* on both sides with the same *Form*, that *Sheet* cut in two in the *Short Crofs*, if *Quarto* or *Octavo*, and in the *Short* and *Long Crofs*, if *Twelves*, and folded as *Octavo* or *Twelves* ; the *Pages* (I say) of each *Half-sheet* shall follow in an orderly succession.

Having premised thus much, he takes up the *Pages* he set by on *Papers* in an orderly succession when he *Tyed* them up, grasping the edges of the *Papers* that stick up on both sides the *Page* tight, that so the bottom of the *Paper* may stand the stronger against the bottom of the *Letter*, to keep it from falling out ; and bringing it thus to the *Correcting-stone*, he gets the two last *Fingers* of his *Right Hand* under the *Head* of the *Page*, but not under the *Paper* sticking up about the *Head* of the *Page*, keeping his other two *Fingers* and *Thumb* on the sides of the *Page*, and slips or slides his *Left Hand*, so as the *Palm* of it may turn towards the bottom of the *Page* ; and rearing the *Page* up on  
end

end on his Right Hand, he discharges his Left to take away the Paper behind the *Page*; then he grasps his Left Hand about the *Foot-end* of the *Page* in the same posture that his Right Hand grasps the *Head-end*. And having the *Page* thus between his Hands with the bottom of the *Letter* towards him, he directs both his Hands to the place on the *Stone* where the *Page* must stand, and claps it down on the *Stone* so nimbly, that the whole bottom of the *Page* comes all at once to the Face of the *Stone*, lest otherwise he endanger the *Breaking*, *Squabbling*, or *Hanging*, &c. of the *Page*. And thus he sets down all the *Pages* of the *Form*: which having plac'd in order and rank, as before I have shew'd in the *Drafts* of each respective *Volumn*, he lays the *Chase* about them; and (if he have not a *Form* already *Drest*) seeks out *Inner Side* and *Head-sticks* of such a thickness, as with the *Cross* may make a *Margin* between the adjoining *Pages* convenient to the *Volumn* and size of the *Paper*.

If his *Side* or *Head-sticks* be a little too thin, and and he cannot find any to his intended thickness, he puts a *Scaboard* or two between the *Head* or *Side-stick* and the *Cross*, as well to have more *Margin* as to commod the *Press-man* (if occasion be) when he makes *Register*, as I shall further shew when I come to the *Section* of the *Press-man*.

Then he seeks out *Side* and *Foot-sticks*, his *Side-sticks* of the exact length of the *Page*, or a *Scaboard* shorter, or he cuts them to that length, that the *Foot-stick* Bear not against the end of the *Side-stick*, because then the *Letter* will not *Rise*; for the  
Foot-

*Foot-stick* must be a little longer than the breadth of the *Page*, that it may shoot beyond the end of the *Side-stick*.

Then he fits the *Chase* and *Furniture* at *Side* and *Foot*, with *Fore* and *Hind Quoins*, and takes off the *Cords* from the *Pages*, as shall be shew'd by and by.

But if *Marginal Notes* come down the *Side* or *Sides* of the *Pages* (for if there be two *Columns* in a *Page*, the *Marginal Notes* may come down both sides) then, before he fits his *Foot-sticks* he sets a *Scaboard* the length of the *Page*, against the side of the *Page* the *Notes* come on, and a row of *Quotations* almost down the length of the *Page*, or sometimes but one or two in a place at convenient distances, to keep the *Letter* of the *Side* of the *Page* upright, according as he finds his particular *Notes* stand near or far asunder, and afterwards fits his *Foot-stick*. Then he Sets his *Notes*, commonly between the *Cheeks* of his *Stick*, which for that purpose are fitted to the *Measure* of the *Quotation*: And having Set them, he places them in the proper places where they must come in, and with *Quotation Quadrats* of proper *Bodies*, *Justifies* them up, feeling (at last) carefully and cautiously at the *Foot*, that they be neither too soft nor too hard *Justified* to the length of the *Page*.

Now if he have a *Chase*, or *Form*, or *Furniture* already *Drest* (these several phrases are used, though they all signifie the same thing.) If he have (I say) a *Form Drest*, that is, if he or other Workmen have been Working on the same *Work*, i.e. *Book*, before he uses one of the *Wrought-off Forms*, and having it  
on



on a *Letter-board*, *Rinc'd*, as was shew'd in ¶ 2. of this Section, he places it on a Bench or Joint-stool, on that Hand that stands most commodious with that end of the *Stone* he *Imposes* on, and so as there may be a corresponding position, with the *Form Wrought off* and that *Imposing*, viz. that the *First Page* (and consequently all the rest) of the *Wrought off Form* stands on the same Hand with the *First Page* of that *Form* that is *Imposing*.

Then taking out and laying the *Quoins* in their proper places, as I shew'd when he *Stript* the *Form*, at the latter end of ¶ 2. he a little wriggles the *Chase* from one Side to the other, and forward and backwards to Loosen it, and the *Cross* or *Crosses* from the close pinching of the *Letter* and *Furniture*: then takes it off the *Chase*, and lays it a bout those *Pages* he is *Imposing*: Then with his two fore-fingers and Thumbs he takes away the *Inner Side-stick* and the *Head-stick* at once, and at once removes them to the responding *Quarter* of the *Form Imposing*, into the responding places from whence he took them in the *Wrought off Form*. And as he does by the *Inner Side-sticks*, so he does by the outer *Side-sticks*, and by the *Quoins*; placing them in their respective proper places between the *Furniture* and *Chase*, or so many of the foremost *Quoins*, as will go in before the *Cords* are unwhipt from the *Pages*. Thus the *Wrought off Form* is *Stript* and *Naked*; and stands by to *Distribute*.

Having thus translated the whole *Furniture* of the *Wrought off Form* to the *Form Imposing*, he finds the end of the *Cord* that he left sticking up above the

*Face* of the *Letter* (which perhaps by this time is got between the *Furniture* and the *Page*) and laying the Ball of his left Thumb, on the *Face* of the *Letter* at the *Direction* corner of the *Page*, to keep it from *Rising*, he takes the aforesaid end of the *Cord*, between the Fore-finger and Thumb of his Right Hand, and pulls gently to loosen the Noose that fastned the *Cord* when he *Tyed* up the *Page*, till he draws the Noose out, and after it successively all the several Whippings; which done, he places the Balls of his Thumbs, one against the middle of the *Side-stick*, and the other against the middle of the *Foot-stick*, and at once thrusts the *Page* close against the *Inner-Side* and *Head-stick*, and so makes room to get in all the *Quoins*. But if there be more than one *Page* in a *Quarter*, as in *Octavo's* and *Twelves*, then he unties all the *Pages* of that *Quarter*, beginning with the *Inner Pages* first, before he can put in the *Quoins*. Then again, thrusting hard with his Thumbs, against the outer Sides of the *Side* and *Foot-sticks* of the several *Quarters*, to thrust the *Letter* up tight and Square, he looks over the *Form* as nicely as he can, to see what *Letter* or *Letters* may *Rise* in the *Form*, (that is, stand higher than the rest) and with the Balls of his Fingers of both his Hands, (the *Quoins* being close and hard thrust up) pats upon the *Face* of the *Letter* to beat them down: But this is not enough to smoothen the *Form*, but only to smoothen it so as the edges of the *Dressing-block* (when it comes to smoothen it quite) may not job against them. Then he takes the *Dressing-block*, described Section 9. ¶ 3. in his left Hand, and lays the

the

the smooth side of it upon the *Face* of the *Letter*, at the bottom of the *Quarter* next him ; or he takes the *Shooting-stick*, or sometimes the lower part of the clutched *Fist* of his right *Hand*, and knocks either with the *Head* of the *Shooting-stick* (or his *Fist*, as aforesaid) gently upon the upper *Side* of the *Dressing-block*, with quick knocks, removing the *Dressing-block* in a lineal rank upwards, and knocking still quick upon it, as it goes along and comes down again with the *Dressing-block*, in another lineal rank parallel to the first : Then in the same order goes up again and down again, till he have run over the whole *Form*, still knocking with quick knocks upon the *Dressing-block*, that so he may be sure to press down every *Rising Letter* in the whole *Form*, if he see any *Spaces* or *Quadrats* stick up, he thrust them down with his *Bodkin*.

Then to *Lock* up the *Form*, he takes the *Shooting-stick* in his *Left Hand* and the *Mallet* in his *Right*, and placing the *Foot* of the *Shooting-stick* against the small *Quoin* between the *Side stick* and the *Chase*, drives that a little gently up, and then removes the *Shooting-stick* to the next *Quoin*, and so to the third *Quoin* (if there be so many) between the *Side-stick* and the *Chase* ; Then removes his knocking to the thick end of the *Foot-stick*, and afterwards knocks the *Foot Quoins* gently up : Then knocks pretty strongly with the *Shooting-stick* against the thick end of the *Side stick*, and *Drives* the *Quoins* yet harder up : Then to the thick end of the *Foot stick*, and and *Drives* those *Quoins* also harder up. Then at last knocking again, against the thick ends of the *Side*

and *Foot-sticks*, he knocks up the *Quoins* so hard, as that he thinks the *Form* may *Rise*: To try if it will, he draws the hither Side of the long Side of the *Chase*, about an Inch or two over the edge of the *Stone*; and putting his two hands under the *Chase*, Dances the *Form* three or four times so as it may just *Rise* off the *Face* of the *Stone*: but not so high as that any loose *Letters* or *Spaces* may drop out, if there be any in; but only so high as he may see if there be any in or no. If he finds there are many in that do not *Rise* with the *Form*, he says the *Form* Dances, wherefore he looks carefully upon his *Pages* of *Letter*, to find out the Cause: For generally, either the *Letter Hangs* or the *Lines*, are ill *Justified*: or else it is not *Hard* enough *Lockt up*.

If he finds by his Eye the *Letter Hangs*: he must *Un-lock* and *Loosen* the *Form*, or that *Quarter* that *Hangs* pretty *Loose*, that the *Letter* may be set to Right; which he does with patting upon the *Face* of the *Letter* where it *Hangs*, with the *Balls* of the *Fingers* of both his *Hands*, to twist or turn them into a Square Position.

If it be only a *Single Letter* or two that drops, he thrusts the end of his *Bodkin* between every *Letter* of that Word, till he comes to a *Space*: and then perhaps by forcing those *Letters* closer, he may have room to put in another *Space* or a *Thin Space*; which if he cannot do, and he finds the *Space* stand *Loose* in the *Form*; he with the *Point* of his *Bodkin* picks the *Space* up and bows it a little; which bowing makes the *Letters* on each side the *Space* keep their parallel distance; For by its Spring it thrusts the  
*Letters*

*Letters* that were closed with the end of the *Bodkin* to their adjunct *Letters*, that needed no closing. Or sometimes he chews a small bit of *Paper*, and with the *Point* of his *Bodkin* forces that in on one side of the *Space*: and so fills up the Vacancy between the *Space* and the *Letter*. But both these ways are meer present Helps, and (in plain terms) accounted Botches, as being an Argument that his *Lines* were not well *Justified* in his *Stick*.

If he finds the *Form* or any part of it, was not hard enough *Lockt* up, he *Locks* all, or part harder up, as was shew'd before.

But now his *Form Rises*; Wherefore he draws the Long *Side* of the *Chase* (as before) a little over the edge of the *Correcting-Stone*, and putting two or three of his *Fingers* into the Vacancy between the *Quoins*, or else into the Vacancy at the ends of the *Chase*; he rears the *Form* upon the farther *Side* of the *Chase*, and removing his right *Hand* to the Short end of the *Chase*, grasps it near the upper corner, and then discharges his left *Hand* also; and removes it to the diagonal corner of the *Chase*; and so slides the long *Side* of the *Chase* off the hither Edge of the *Correcting-Stone*: Then slipping his *Hands* to the bottom of the *Chase*, about two or three Inches within the corners, with the insides of his *Hands* towards the *Face* of the *Letter*, and leaning the upper *Side* of the *Chase* against the upper part of his *Breast*, and clutching the *Brawn* of the inside of the upper *Joynt* of his *Arm* over the upper corners of the *Chase*, he carries the *Form* so before him to the *Press*, and lays it upon the *Stone*, for the *Press-man* to make a *Proof*



of. The *Proof* being made, the *Press-man* brings the *Proof*, and layes it on the *Compositers Case*: and he brings the *Form* again and layes it on the *Correcting-Stone*, and rubs it over with the *Ly-Brush*, as shall be shew'd in proper place. And the *Compositor* gives the *Correcter* the *Proof* and his *Copy* to *Correct* it by: which being *Corrected*, the *Correcter* gives it again to the *Compositor* to *Correct* the *Form* by.

### ¶ 8. Of *Correcting*.

If there be but few *Faults*, and those easie ones, the *Compositor* Gathers the *Corrections* in his *Stick*, beginning at the bottom of every *Page*, and so ascending upwards: Because when he is *Correcting*, the *Corrections* of the top of the *Page* stand then first in the *Stick*, and therefore are readiest to his Hand. But if there be many *Faults* he brings the *Lower-Case* to the *Correcting Stone*, and takes his *Corrections* as he uses them.

Then with the *Mallet* and *Shooting-stick* he *Unlocks* the *Form*, as was shew'd in ¶ 3 of this Section. But keeps the *Quoins* pretty tight up, to secure the *Letter* from *Squabbling* or *Hanging*.

Then he *Folds* his *Proof* so oft double, till all the *Pages*, except that he intends to *Correct* first are *Folded* out of *Sight*, and he also *Folds* down the *Left Hand Margin* of that *Page* under the *Proof*, and then lays that *Folded Side* of the *Page* along, and close to the same *Page* in the *Mettle*: So that the *Head-line* in the *Proof* lye in the same range with the *Head-line* on the *Mettle*, and the *Foot-line* even with

with the *Foot-line* on the *Mettal*, and consequently all the *Lines* of that *Page* both on the *Proof* and *Mettal* agree, and stand in a mutual range.

Now therefore he looks in the *Proof*, to see where the *Correcter* has markt a *Fault*, and having found it in the *Proof*, he runs along that *Line* with his Eye to the same *Line* on the *Mettle*, which he easily does, because the *Line* of *Mettle* stands in the same range with that in the *Proof*, and finding the *Fault* in the *Mettle* also, he having now his *Bodkin* in his right Hand, with the *Blade* of it between his Fore-finger and Thumb, within half an Inch or three quarters of the *Point*, and the middle of the *Bodkin* within his clutched Hand to guide and command it, he sticks the *Point* of his *Bodkin* into the Neck of the *Letter*, viz. between the *Beard* and the *Face*, and lifts it with the *Point* of the *Bodkin* so high up above the *Face* of the other *Letters*, that he can lay hold of it with the Fore-finger and Thumb of his left Hand to take it quite out.

I must a little digress, to paraphrase on the posture he holds the *Bodkin* in: For in the sticking his *Bodkin* into the *Letter*, he holds the *Blade* of it, so that it may make as small an angle with the *Face* of the *Letter* in the *Form* as he can, viz. as flat towards the *Face* of the *Letter* as he can, without touching the *Face* of any of the adjacent *Letters* with the *Blade* of the *Bodkin*; For if he touches the *Face* though lightly, yet it may more or less *Batter* and spoil the *Face* of those *Letters* it touches, and so he creates himself a fresh trouble to mend them.

The reason why he holds the *Blade* of the *Bodkin*

as flat to the *Form* as he can, is, Because a small Horizontalish entrance of the *Point* of the *Bodkin* into the *Neck* of the *Letter*, will raise the *Letter* up above the *Face* of the *Form*, the *Blade* of the *Bodkin* being fastned in the little Hole it makes in the *Neck* of the *Letter* : But if he should stick the *Point* of the *Bodkin* straight or straightish down upon any part of the *Letter*, it would indeed make an Hole, but not fasten in the *Mettle*, to draw it up ; for the weight of the *Letter* would make it slip off the round and smooth *Point* of the *Bodkin*. Besides the pressing the *Point* of the *Bodkin* with his right Hand against the side of the next *Letter* on his left Hand, keeps the *Point* of the *Bodkin* fast in the little Hole it makes in the *Neck* of the *Letter*, and therefore though the *Bodkin* have but a little entrance, yet it has hold enough to draw it up by. Now to return.

Having taken the Fault out, he puts the *Letter* that the *Correcter* markt in the *Margin* of the *Proof* in the room of it. Suppose an o were markt and n dasht out, therefore when he has taken the n out he puts an o in the room : These two *Letters* being of equal thickness, gives him no trouble to *Justifie* the *Line* again after the Fault is *Corrected* ; but if they had been of unequal thicknesses, as suppose an m to come out, and an n to be put in ; in this case he puts in a *Space* between two words (where he finds most convenient) to *Justifie* the *Line* again : Or suppose an n to come out, and an m to be put in ; now he must take out a *Space* where he finds most convenient to make room for the m, as being thicker by a *Space* than an n. Thus as he *Corrects* he

he still has a care to keep his *Lines* true *Justified*; which he tries by pressing the Balls of his two middle Fingers pretty hard against the ends of three *Lines*, to make them rise a little above the *Face* of the *Form*, whereof the *Line* he examines is the middlemost; for if that *Line* is not hard enough *Justified*, he will between the Balls of his Fingers find it hollow, or it will not *Rise* with the other two: And if it be too hard *Justified*, he will find the Balls of his Fingers *Bear* only or hardest against that *Line*, and the *Line* on each side it will not *Rise*.

If there be a long *word* or more left out, he cannot expect to *Get* that in into that *Line*, wherefore he must now *Over-run*; that is, he must put so much of the fore-part of the *Line* into the *Line* above it, or so much of the hinder part of the *Line* into the next *Line* under it, as will make room for what is *Left out*: Therefore he considers how *Wide* he has *Set*, that so by *Over-running* the fewer *Lines* backwards or forwards, or both, (as he finds his help) he may take out so many *Spaces*, or other *Whites* as will amount to the *Thickness* of what he has *Left out*: Thus if he have *Set wide*, he may perhaps *Get* a small *Word* or a *Syllable* into the foregoing *Line*; and perhaps another small *Word* or *Syllable* in the following *Line*, which if his *Leaving out* is not much, may *Get* it in: But if he *Left out* much, he must *Over-run* many *Lines*, either backwards or forwards, or both, till he come to a *Break*: And if when he comes at a *Break* it be not *Gotten in*; he *Drives* out a *Line*. In this case if he cannot *Get in* a *Line*, by *Getting* in the *Words* of that *Break* (as I just now shew'd you

how he *Gets-in* what was left out in the *Proof*) or by making less *White* to the *Title* of a *Section* or *Chapter* (if any happen in that *Page*) he must *Over-run* the next *Page* backwards or forwards, till that *Line Comes in*: Thus sometimes he *Over-runs* all the succeeding *Pages* of the *Sheet*, and at last perhaps *Drives out a Line to Come in* in the next *Sheet*.

If he have *Set* a word or small sentence twice, he must take that out, and *Drive-out* his *Matter*. If he be near a *Break*, and the *White* of that *Break* not very long, he may perhaps *Drive it Out* at the *Break* by putting in part of the next *Line* to fill up almost so much as he took out; but not quite so much, unless his *Matter* was at first so *Wide Set* that he can *Space out* no more, or unless the *Break-line* he comes to have so much *White* in it that he fears *Getting-in* that *Line*: If either of these inconveniences happen, he *Drives-out* as much as he can backwards in the *Matter*; that is, he takes out so much as he thinks he cannot *Drive-out* when he is at the *Break*: He takes it out at the beginning of the *Line*, and puts it in at the latter end of the *Line* before it: But first he takes out almost so much of the beginning of his Second upper *Line*, to make room for it: I say almost so much, because he intends to *Space-out* the rest if it were not too *Wide Set* at first. And thus he runs on from *Line* to *Line*, still taking out less and less at the beginning of every former *Line*, and putting it into the *Line* above that, that he may *Space-out* his *Matter* as he *Over-runs*, till his *Double-Setting* is *Driven-out*.

But if he have *Set* a *Line* or *Lines* twice, and cannot



cannot *Drive* it or them *Out* at a *Break* or *Breaks* ; or that he cannot *Set* more *Whites* at the beginning of a *Section* or *Chapber*, he must *Over-run* the next *Page* or more, or the whole *Sheet* till it be *Driven-out* : And if in *Over-running* the whole *Sheet* it be not *Driven-out* , he must *Set* so many *Lines* , of the following *Matter* as will make up the last *Page*.

Many times either for *Getting-in* or *Driving-out*, the *Compositer* will chuse to *Over-run* in his *Stick*, and then he *Wets* the *Page* he is to *Over-run*, with the *Spunge* (that the *Letter* may the better stick together) and he separates so much of the former part of the *Page* as he intends to *Over-run*, from the rest of the *Page*, and places himself before the *Notches* of the *Letter*, and takes up about an Inch and an half or two Inches of the first Separated *Line*, and brings it to the *Stick* ; and as it is coming along he turns the *Notches* upwards, and places that *Taking up* in the *Stick*. When he *Takes-up*, he places the Inside of the first Joynt of his middle Finger of his right Hand against the beginning of that *Line*, and the Ball of his Thumb against the other end of that *Taking-up*, and the Ball of his Fore-finger behind the *Taking-up*, about the middle of it, and so pinching it lightly brings it to his *Stick*, as aforesaid. And having thus by several *Takings-up*, gotten a *Line* into his *Stick*, he looks it over to see what *Spaces* or other *White* he can take out or put in, according as he has either *Left-out* or *Set-twice*, and then he *Justifies* the *Line* again, as was shew'd in ¶ 5. of this Section. And thus he *Over-runs Line* after *Line*,

till he has *Gotten-in* or *Drove-out* his *Leaving-out*, or his *Twice Set Matter*.

If the *Compositer* is not firmly resolv'd to keep himself strictly to the Rules of good Workmanship, he is now tempted to make *Botches* ; viz. *Pidgeon-holes*, *Thin-Spaces*, no *Space* before a *Capital*, *Short &s*, *Abbreviations* or *Titled Letters*, *Abbreviate Words*, &c. And if Botching is in any Case excusable, it is in this; for with too great *Spacing-out* or too *Close Setting*, he many times may save himself a great deal of Labour, besides the vexation of mind, and other accidental mischiefs that attend *Over-running*.

It sometimes chances that a *Compositer*, by having two or more *Pages* in his *Sheet* with the same *Direction-line*, or by mistaking the right place of his *Page* when he set it by on a Paper under his *Case*, as was shew'd ¶ 7. of this Section, or by some other accident that may happen ; I say it sometimes happens (but seldom through too much care) that he *Transposes* two *Pages*, or more, in his *Sheet* : In this case he *Unlocks* that *Quarter*, or those *Quarters* the *Pages* are in, and loosning the *Cross* or *Cresses* from those *Pages* and their *Furniture*, takes the rest off the *Correcting-stone* with their *Furniture* about them : And if it be a *Folio* or *Quarto* he does not wet the *Pages*, because those *Forms* have *Furniture* about every side of the *Page*, which will keep up the *Letter* from falling down ; But he only places the Balls of his two Thumbs against the outside of the *Furniture*, about the middle of the *Head* and *Foot* of the *Page*, and the insides of his two middle Fingers, assisted by his Fourth and Little Fingers,

gers, in a parallel position to his middle Finger, (to strengthen them against the *Furniture*) about the middle of the *Sides* of the *Page*, letting the length of his Fingers reach as far from each corner of the *Page* towards the middle of it as he can, and so by a steady pressing the Balls of his Thumbs and the Balls of his Fingers on each Hand towards each other, he draws, or as he sees most convenience, thrusts the whole *Page* out of its wrong place, and sets it by on the *Stone*, till in the same manner he removes the other *Transpos'd Page* into the place of the first remov'd *Page*: And thus if there be more than two *Transpos'd Pages* in the *Sheet*, he removes them all, and Sets the right *Pages* in their right places.

But if it be an *Octavo* or *Twelves*, or any other *Form* that has *Gutter-sticks* between two *Pages*, he must Wet those *Pages* he leaves on the *Stone*, because when he removes one *Page*, by the help of the *Gutter-stick*, one side of the other *Page* will stand *Naked*; and consequently with the Shaking, Jogging, or Trembling of the *Stone* or *Floor*, the *Letters* on that side will be in great hazard of falling down, especially if the *Face* of the *Stone* happens not to be truly *Horizontal*: I say, happens not to be truly *Horizontal*, because the *Stone* is seldom laid with any caution, but only by guess.

Having placed the *Pages* in their right places, he again lays the *Chase* about them, and *Locks* them up again, as was shew'd in ¶ 7. of this Section: Then he carries the *Form* to the *Press*, and lays it on the *Stone* for a *Second Proof*, and sometimes for

a *Third Proof*; which having *Corrected*, he at last brings the *Form* to the *Press*, and again lays it on the *Stone Right*, viz. in *Folio's* and *Octavo's* with the *Foot* of the *First* or *Third Page* (which he easily knows by their *Signatures*) towards him, and the side of it next the *Plattin*: And in *Quarto's* and *Twelves*, with the *Foot* of the *First* or *Third Page* next the *Tympan*.

After all this *Correcting* a *Revise* is made, and if any *Faults* are found in any *Quarter* of it, or in all the *Quarters*, he calls to the *Press-man* to *Unlock* that *Quarter*, or the whole *Form*, that he may *Correct* those *Faults*: For when the *Form* is on the *Press* it is not the *Compositers* task to *Un-lock* the *Form*: Neither would a good *Press-man* be content he should make a knocking on his *Press*, especially if the *Press-man* have *Made-ready* his *Form*, as shall be shewed in the next Section.

#### ¶ 9. Of Counting or Casting off Copy.

*Counting* or *Casting off Copy* (for both Phrases are indifferently us'd) is to examine and find how much either of *Printed Copy* will *Come-in* into any intended number of *Sheets* of a different *Body* or *Measure* from the *Copy*; or how much *Written Copy* will make an intended number of *Sheets* of any assigned *Body* and *Measure*.

The Rule and Method of *Counting off* either *Printed* or *Written Copy* is the same, only *Written Copy* is more difficult, because subject to be irregularly *Writ*: Therefore if I shew you how the *Compositer*  
Casts

*Casts off Written Copy*, I do at the same time inform you how to *Count off Printed Copy*.

The *Compositer* therefore first considers what *Bodied Letter* his Work is to be wrought on : then he carefully peruses the *Copy*, considering with himself whether it be evenly Written or unevenly Written, *viz.* whether it be throughout of an equal siz'd Hand, or whether part be close Written and part wide Written ; if it be an equal siz'd Hand, that is, equally close Written in general, as well between *Letter* and *Letter*, *Word* and *Word*, as between *Line* and *Line*, he has scarce more trouble to *Count it off* than *Printed Copy*.

Wherefore, the *Measure* being given, he *Composes* one *Line* in his *Measure* : The *Matter* he *Composes* he chuses out of that part of his *Copy* that in his Judgement he admits is most indifferently Written, between Wide and Close, as being such as his whole *Copy*, one part with another, will likeliest *Come-in* alike with. This *Line* being *Compos'd*, he considers how much of his *Copy* it takes up, *viz.* whether it runs *Line* for *Line*, or whether two *Lines* of his *Copy* make one *Line* in his *Stick* ; or whether a *Line* and an half, or a quarter, or half quarter of his *Copy*, &c. make one *Line* in his *Stick* ; or whether a *Line* of his *Copy* make two *Lines* in his *Stick*, or a *Line* and a half, or a quarter, or half a quarter, &c. and accordingly calculates what just number of *Lines* will make another just number of *Lines* in his *Stick*. For Example.

If his *Copy* and *Measure* run *Line* for *Line*, then consequently 10, 20, 30 *Lines* of the *Copy* will make  
10,



10, 20, 30 *Lines* in the *Measure*; and accordingly he counts what number of *Lines* in his *Copy* will make a *Page*; and by that, what number of *Lines* will make two *Pages*, four *Pages*, eight *Pages*, and consequently so many *Pages* and *Sheets* as he is to *Count off*.

If two *Lines* of *Copy* make one *Line* in the *Stick*, then consequently ten *Lines* in the *Copy* will make five *Lines* in the *Stick*; twenty *Lines* in the *Copy* ten *Lines* in the *Stick*, &c.

If a *Line* and a half of the *Copy* make one *Line* in the *Stick*, then fifteen *Lines* of *Copy* makes ten *Lines* in the *Stick*, thirty makes twenty, &c.

But a pair of *Compasses* makes the best expedition in *Counting off* of *Copy*, and (by my experience) I have found the surest way. I *Compose* one *Line* as aforesaid; if the *Line* I *Compos'd* Gets-in part of the next *Line*, viz. the second *Line* of the *Copy*, I place one Foot of a pair of *Compasses* at the beginning of the *First Line*, and open the other Foot to what was *Got-in* of the *Second Line*, and turn the *Compasses* about upon the Foot in the *Second Line*, till the other Foot reach the *Third Line* of the *Copy*; then turn about the Foot in the *Third Line* of the *Copy* till the other Foot falls in the *Fourth Line* of the *Copy*; and so from the *Fourth*, to the *Fifth*, *Sixth*, &c. till the *Compasses* end with a *Line* in the *Copy*, or near the end of a *Line*, remembring as I go along, how oft I turn'd the *Compasses* about. Suppose, for Example, seven times: Then I number the *Lines* of *Copy*, beginning with the first *Line* and ending with the last *Line*, that the Points of the

the *Compasses* were turn'd over, and find them Eight, Nine, Ten, &c. and say Eight, Nine, Ten, &c. *Lines* of the *Copy*, makes Seven *Lines* of the *Measure*.

As now I have shew'd you how I *Count off Copy* if it come in more than *Line* for *Line*, so I shall shew you how I proceed if a *Line* in the *Copy Drive* out in the *Measure*.

It is but placing one Foot of a pair of *Compasses* at the farther end of the first *Line*, and opening the other Foot to the place where the *Compos'd Line* ended, and by turning about the *Compasses*, as before, to the Second, Third, Fourth *Lines*, &c. till they end in the beginning of a *Line* in the *Copy*; for then (as before) counting the number of *Lines*, beginning with the first, and ending with the last; Suppose Eight, Nine, Ten, &c. I say Eight, Nine, Ten, &c. *Lines* of the *Copy* makes so many *Lines* as is the number of times the Feet of the *Compasses* were turned about, between the first *Line* and the last *Line*.

*Another way Arithmetically perform'd.*

Suppose it be requir'd to know how many *Sheets* 127 *Pages* of *Written Copy* will make? I count the number of *Letters* contained in an ordinary *Written Line* of *Copy*, such a *Line* as I guess is likely to *Run Line* for *Line* with the generality of the rest of the *Copy*: And (for Example) I find 43 *Letters* in that *Line*: Then I count the number of *Lines* in an whole *Page*, and find 35 *Lines*, I Multiply 43 by

M m
35,

35, the Product is 1505 for the number of *Letters* in an whole *Page*: Then I multiply 1505 by 127, the number of *Pages* in the whole *Written Copy*; the Product is 191135, the number of *Letters* in the whole *Written Copy*.

If it be now required to know how many *Sheets* in *Quarto*, of the *English Body* this *Written Copy* will make, agreeable to any *Measure* already *Printed*: As for Example, the length of a *Page* given is 33 *Lines*; and in one *Line* is contained 47 *Letters*: I multiply 47, the number of *Letters* in one *Line*, by 33, the number of *Lines* in a *Page*, the Product is 1551. With this Product I divide 191135, the number of *Letters* in the whole *Written Copy*, and the Product gives 123, that is, 123 *Pages* in *Quarto*, which divided by 8, the number of *Pages* in one *Sheet*, gives 15 *Sheets* and 3 *Pages*.

If it be required to know how many *Sheets* it will make of *Pica* in an *Octavo*, or of *Long Primer* or *Brevier* in *Twelves*, &c. the manner of Working is the same: For Multiplying the number of *Letters* in one *Line* by the number of *Lines* in one *Page*, and Deviding the number of *Letters* in the whole *Work* (suppose, as in the foregoing Operation by 191135) by the number of *Letters* in one *Page*, the Product gives the number of *Pages* in the Quotient: And then at last Deviding the number of *Pages* by 16 if an *Octavo*, or 24 if *Twelves*, &c. you have in the Quotient the number of *Sheets*, and in the Remain (if any be) the number of *Pages*.

These two last ways are the surest Rules for *Counting off Copy*: But yet the *Compositer* has several *Considera-*

siderations upon his *Copy* before he dares conclude he has truly and exactly *Counted off*.

For first, a strict regard must be had to the *Breaks* that come in the *Copy*: For long *Breaks* in the *Copy* are generally likely to be *Got-in*, and consequently a *Line* is *Got-in*: But short *Breaks* often *Drive-out* a *Line*. Therefore though the *Compositer* has already in general *Cast off* his *Copy*, yet he more particularly considers his *Breaks*; and indeed they serve as so many Regulators to him, to keep him within the bounds of his *Counted off Copy*: For every *Break* he examines by the number of *Lines* from the last *Break*, by the length of the *Break*, and by the close or wide Writing of his *Copy*, whether it will be *Got-in* or *Drove-out*, and accordingly marks it in his *Copy*, before he reckons he has done *Counting off*.

A *Break* to be *Got-in* he marks thus [ , and adjoyns in Numerical Figures, the number of *Lines* the *Matter* between the last *Break* and it will make. A *Break* to be *Drove-out* he marks thus —, and (as aforesaid) adjoyns Numerical Figures to remember him what number of *Lines* he accounted that *Matter* to make from the last *Break*.

If *Chapters*, *Sections* or *Paragraphs* happens in the *Copy*, the *Compositer* takes room enough to set them and their Titles gracefully in; and marks in Numerical Figures what number of *Lines* he assigns for it.

If as he *Counts off* his *Copy* he finds *Abbreviated Words*, he tells the *Abbreviated Words* to the full number of *Letters* that spells the Word at length, because in *Composing* he *Sets* those Words at length:

M in 2

And

And should he not consider it in his *Counting off*, he would in *Composing* find his *Matter Run out* from his *Copy*.

Scarce any *Copy* is so regularly Written (as hath several times before been hinted) but that some places are Wider, and other places Closer Written, than the generality of the *Copy*, wherefore he considers both these accidents in his *Copy*, and accordingly allows for them.

If it happens that much *Italick* comes in the *Copy*, as sometimes two or three *Lines*, or more, or half a *Page*, an whole *Page*, or several *Pages*; the *Compositer* considers *Italick* is thinner than *Roman*, and consequently *Gets-in* more than *Roman* does, and therefore in his *Counting off* will allow accordingly for it.

The proportion that I allow for it is as 9 to 10, or which is all one, as 45 *Roman Letters* is to 50 *Italick Letters*: So that if a *Measure* holds 45 *Roman Letters*, the same *Measure* will hold 50 *Italick Letters*.

As *Italick* is thinner than *Roman*, so the *English Face* is thicker than the *Roman*; wherefore if he meets with the *English Face*, he considers that accordingly.

I find the proportion to be as 40 to 43, viz. 40 *English Faced Letters* fill the same *Measure* that 43 *Roman* does; and consequently for every 40 *Lines* to be Set in *English* he must Count off 43 *Lines*; and so proportionably for more or less.

But yet I shall not deliver these my Observations on the *Italick* and *English* to hold thus in all *Italicks* and



and *Englifhes*, nor all *Romans* of the fame *Body* to be of an equal *Thicknefs*, becaufe fome are *Cut Thicker* or *Thinner* on the *Face*: And befides, fometimes *Letter Cast*, though in the fame *Matrices*, are by the *Founder Cast* *Thicker* or *Thinner*, and confequently in either Circumftance *Drive-out* or *Get-in*: Wherefore a *Compofiter* will confider what *Fount* of *Letter* it is he *Works* on, and accordingly *Count off* his *Copy*.

¶ 10. Of Papering up of Pages.

*Papering up* of *Pages*, or *Papering up* of *Letter*; are two phrafes indifferently ufed for the fame meaning. Though this Operation feems fo fleght and trivial that it may be thought not worth mentioning, yet it being a task incumbent on the *Compofiter*, it becomes mine too to fhew how it is performed.

It is thus: When a *Book* is finifht, and the *Compofiter* is to *Work* on other *Letter* afterwards; the *Wrought off Letter* is to be *Papered up*. The *Preff-man* therefore having *Wafht* the *Wrought-off Forms*, the *Compofiter* *Rinces* them, as was fhewed in Section 22. ¶ 3. He *Rinces* the *Letter* as well as if it were *Rinced* for prefent ufe, or rather better: for elfe the *Inck* that is defolved among the *Ly*would, with long ftanding by, harden between the *Letter*, and make the *Letter* ftick fo faft together that when it comes afterwards to be *Deftributed*, the *Compofiter* fhall not without great difficulty and trouble get them afunder. This fticking together of the *Letter* is call'd *Baking* of the *Letter*. And *Compofiters* in this Cafe fay, *The Letter is Bak'd*. M m 3 The

The *Compositer* having *Strip* the *Form*, whips *Cords* as tight as he can about every *Page*, not to *Tye* them up for good and all, but aswell to keep up the *Letter* on the sides of the *Pages* that it fall not down, while it stands by for some dayes on the *Letter-board* to *Dry*, as to keep the *Letter* tight together that he may the better with his Hands take an whole *Page* at once off the *Letter-board*.

When it is *Dry*, if the *Pages* are not too broad for his Grasp, he places his Body against a side of the *Pages*, and the Balls of his two Thumbs against the side of a *Page*, one indifferently between the middle and *Head* of the *Page*, and the other between the middle and *Foot* of the *Page*, and with the three Fore-fingers of each Hand placed on the other side of the *Page*, grasps the *Page* between them and his Thumbs; and to keep his Hands the steddiest, stretches the insides of his Little-fingers one against the *Head* the other against the *Foot* of the *Page*: And having the *Page* thus Steddy between his Hands close prest on all the sides of the *Page*, he with a quick motion nimbly rears one side of the *Page* upright, and receives the weight of it either on the Balls of his Thumbs or on the Balls of his Fingers, as best likes him; and so carries it to his *Galley* and *Tyes* it firmly up; as was shewed ¶ 6. of this Section.

As he took and *Tyed* up this one *Page*, so he takes and *Tyes* up all the *Pages*. But if a *Page* be too big for his Grasp, he underlays the *Slice* of a *Galley* till it lye within a *Scaboard* so high as the edge of the *Letter-board*, and getting some one to hold the *Slice* steddy against the edge of the *Letter-board* he slides the

the *Page*, with the *Head* or *Foot* forwards upon the *Slice*, and so carries the *Page* to the *Galley* and *Tyes* it up, as aforesaid.

He sends the Boy to the Warehouse-keeper for so much Paper as he finds he shall want; and if the *Pages* are small, he layes a single Sheet down on the *Correcting-Stone* or on a *Letter-board*, and sets a *Page* down on that Sheet of Paper, so as the farther Side of the *Page* may stand towards one end of the Sheet; and so far on the Sheet, as that the end of it may lap over the *Face* of the *Letter*, and about half way down the *Shank* of the *Letter*, on the hither side the *Page*: And smoothing the Paper tight over the *Face* of the *Letter*, and half way down the *Shank* on the hither Side, and quite down the *Shank* at the *Head* and *Foot* of the *Page*, he folds the loose Paper that hangs over the ends of the *Page*, from each corner of the *Page*, to end in an Angle in the middle of the loose Paper, and then folds the other end of the Sheet of Paper tight over the Paper that covers the *Face* of the *Letter*; and also folds the loose Paper at the ends of the *Page* down into Angles, as he did the former loose ends: Then rearing his *Page* over the further side, lays the *Face* downwards, still smoothing the Paper tight, and folding in the un-folded corners, to meet in the same Angles with the former folded Angles in the middle of the loose Paper: And thus so long as he has Paper to spare he turns his *Page*, wrapping it at least twice, or if he can thrice about in Paper, folding and doubling down the Loose Paper into Angles as before: And at last turns up those Angles or Lappets  
either

either over the *Face* or Bottom of the *Letter*, and turns the *Page* upon those folded Lappets, that its weight may press and keep them close under the *Page*.

If the *Pages* are large, so as one *Sheet* will not compass them twice or thrice about, to be strong enough to bear the *Letter*, which generally sinks downwards in the middle of a *Page*, he lays two, or sometimes three *Sheets* under the *Page*: And as he wrapt up the first Lay of *Sheets*, adds more to lengthen them out, that they may wrap at least three or four times about the great *Page*,

Having thus *Paper'd up* the *Pages*, and folded the Lappets under them, he writes upon the upper side what *Letter* it is, viz. *Long-Primer Roman*, *Long-Primer Italick*, *Pica Roman*, *Pica Italick*, *Pica English*, *English Roman*, *Italick*, &c. and sets them by for the *Master-Printer* to dispose of.

§. 23. *Of the Correcter, and his Office.*

A *Correcter* should (besides the *English* Tongue) be well skilled in Languages, especially in those that are used to be Printed with us, viz. the *Latin*, *Greek*, *Hebrew*, *Syriack*, *Caldæ*, *French*, *Spanish*, *Italian*, *High Dutch*, *Saxon*, *Low Dutch*, *Welsh*, &c. neither ought my innumeration only these be a stint to his skill in the number of them, for many times several other Languages may happen to be Printed, of which the Author has perhaps no more skill than the bare knowledge of the Words and their Pronunciations, so that the  
Or-

Orthography ( if the *Correcter* have no knowledge of the Language ) may not only be false to its Native Pronunciation , but the Words altered into other Words by a little wrong Spelling, and consequently the Sense made ridiculous, the purpose of it controvertible, and the meaning of the Author irretrievably lost to all that shall read it in After times.

He ought to be very knowing in Derivations and Etymologies of Words, very sagacious in *Pointing*, skilful in the *Composers* whole Task and Obligation, and endowed with a quick Eye to espy the smallest *Fault*.

But I shall say no more of his Qualifications; but suppose him endowed with all necessary accomplishments for that Office.

The *Composer* either carries him a *Proof*, or sends the Boy with it to his Apartment, which is commonly some little Closet adjoyning to the *Composing-room* : And the *Master-Printer* appoints him some one that is well skill'd in true and quick Reading, to Read the *Copy* to him, whom I shall call the *Reader*.

This *Reader*, as I said, Reads the *Copy* to him, and the *Correcter* gives attention; and at the same time carefully and vigilantly examines the *Proof*, and considers the *Pointing*, *Italicking*, *Capitalizing*, or any error that may through mistake, or want of Judgement be committed by the *Composer*.

If he finds one *Letter Set* instead of another, as in this Word tho for the, he dashes out the wrong

N n

*Letter*



*Letter* thus  $\text{th}\phi$ , and Writes the *Letter*  $\text{e/}$   
it should be on the Right Hand *Margin*  
of the *Page*, right against the same *Line*,  
and makes a *Dash* behind it, as you may  
see in the *Margin*.

If two or three, or more Words in the  
same *Line* have *Faults* in them, as in these  
Words,  $\text{P}\phi\text{tience per force}$ , where first  $\text{a/c/r/o/}$   
an 'o is *Set* instead of a, e instead of c,  
t instead of r, and c instead of o: These  
he marks in an orderly succession towards  
the Right Hand, against the same *Line*,  
as you may see in the *Margin*.

But if one word be *Set* instead of ano-  
ther, as *Scoff* instead of *Smile*, here he  
marks *Scoff* out thus  $\text{Scoff}$ , and writes  
*Smile*, as in the *Margin*.

*Smile/*

If a *Word* or *Words*, or *Letter*, or *Point*  
be *Left out* he makes this mark  $\wedge$  where  
it is *Left out* for a mark of *Insertion*, and  
Writes in the *Margin* what must come in.

If a *Space* be *Left out* he makes the for-  
mer mark of *Insertion* where it should  
come in, and makes this mark  $\ast$  in the  
*Margin*.

$\ast/$

If a whole *Sentence* be *Left out*, too  
long to be Writ in the *Margin*, he makes  
the mark of *Insertion* where it is *Left out*,  
and only Writes (*Out*) in the *Margin*. If (*Out*)  
the *Sentence* *Left out* be not very long,  
he Writes it under the *Page*, or on the  
*Left Hand Margin* of the *Page*: But if  
it

it be too large to be Writ in the *Margin*, or under the *Page*, he Writes in the *Margin*, See the Copy. (See the Copy)

If a Word or Sentence be Set twice, as Him Him, he marks out one Him thus *Him*, and makes this mark § in the *Margin*, for *De-  
leo*, to take out.

§ /

If a *Letter* be turned thus *3*, he dashes it out as you see, and makes this mark in the *Margin*.

9 /

If Words are *Transposed*, that is, if one Word stand in another Words place, as, no I love Swearing, and it should be, I love no Swearing ; he marks this *Fault* thus, *(no I love)* Swearing, and makes this mark *⌢* in the *Margin*. The like mark he makes in *Matter* and *Margin* if two *Letters* are *Transpos'd*.

# /

If a *Space* or an *m* or *n* *Quadrat*, &c. stick-up, and *Print Black*, as between these words, he marks in the *Margin* thus.

L

If a *Word* be Set in *Roman Letter* instead of *Italick* or *English Letter*, he dashes the Word underneath thus, and Writes *Ital.* or *Eng.* in the *Margin*.

Ital/ Eng/

In like manner, if a single *Letter* or more *Letters* be Set in *Roman*

N n 2

Let-

*Letter*, and it should be *Italick* or *English Letter*; or if in *English* or *Italick*, and it should be *Roman Letter*, he dashes the *Letter* or *Letters* thus underneath, and writes *Ital.* *Ital/ Rom/ Eng/ Rom.* or *Eng.* in the *Margin*: Or if *Lower-Case Letters* be *Set* instead of *Capitals*, he dashes them underneath, and Writes *Capt.* in the *Margin.* *Capt./*

Having Read the *Matter* of the *Proof* he examines again if the *Form* be right *Impos'd*, for though he before turn'd the *Pages* in the *Proof* as he read them according to their orderly places, yet he will scarce trust to that alone, but again examines them on purpose, and distinctly, which he does not only by the *Direction Word*, but by examining the whole Sentence the *Direction* comes in, both at the end of the *Page*, and the beginning of the next *Page*.

He examines that all the *Signatures* are right, and all the *Titles* and *Folio's*.

If the Work be large *Forms* and small *Letter*, he has a second, and sometimes a third *Proof*, which he Reads as the first.

After the Second or Third *Proof* he has a *Revise*, which is also a *Proof-sheet*: He examines in this *Revise*, *Fault* by *Fault*, if all the *Faults* he markt in the last *Proof* were carefully mended by the *Compositer*; if not, he marks them in the *Revise*.

Thus you see it behoves him to be very careful as well as skilful; and indeed it is his own interest to be both: For if by his neglect an *Heap* be spoiled, he is obliged to make Reparation.

A D-

## Advertisement to AUTHORS.

**A**lthough I have in the precedent Exercises shew'd the Accomplishments of a good Compositor, yet will not a curious Author trust either to his Care or Abilities in Pointing, Italicking, Capitalling, Breaking, &c. Therefore it behoves an Author to examine his Copy very well e're he deliver it to the Printer, and to Point it, and mark it so as the Compositor may know what Words to Set in Italick, English, Capitals, &c.

For his Italick Words he draws a line under them thus : For English Words he draws two lines under them thus ; and for Capitals a line of Pricks thus, or else draws a line with Red Inck.

If his Copy, or any part of it, be Written in any Foreign Language, he is strictly to spell that

*Foreign Language right : Because the Compositor, as I said in the Preface to this S, takes no notice of any thing therein but the very Letters, Points and Characters he finds in his Copy.*

*If an Author have not (through haste in Writing) made Breaks in proper places; when he comes to peruse his Copy he may find cause to make several Breaks where he made none: In such a case he makes a Crotchet [ thus, at the Word he would have begin his new Paragraph.*

*Thus in all particulars he takes care to deliver his Copy perfect: For then he may expect to have his Book perfectly Printed. For by no means he ought to hope to mend it in the Proof, the Compositor not being obliged to it: And it cannot reasonably be expected he should be so good Natured to take so much pains to mend such Alterations as the second Dictates of an Author may make, unless he be very well paid for it over and above what he agreed for with the Master-Printer.*

*The next Exercises ( God willing ) shall be  
the*



the *Press-mans Trade*, The Office of the *Ware-house-keeper*, The *Customs of the Chapel*, And a *Dictionary* to explain the hard Words and Phrases used in the whole Practice of *Typography*: Which will be the Conclusion of this Second Volume.

### ADVERTISEMENT.

There is now coming forth a small Book, intituled, *Enneades Arithmeticae*; the Numbring Nines, or *Pythagoras* his Table, extended to all Whole Numbers under 10000. And the Numbring Rods of the Right Honourable *John Lord Nepeer*, enlarged with 9999 Fixt Columns or Rods, of Single, Double, Triple and Quadruple Figures, and with a new sort of Double and Movable Rods, for the much more sure, plain and easie performanee of Multiplication, Division, and Extraction of Roots. The whole being very useful for most Persons, of whatsoever Calling and Employment, in all Arts and Sciences: All having frequent Occasions of Accompts, Numbring, Measuring, Surveying, Gauging, Weighing, Demonstrating, &c. The Divine Wisdom having from the Beginning *Disposed all things in Measure, Number and Weight*, Sap. II. 21.

Printed for *Joseph Moxon*, at the Sign of *Atlas* in *Ludgate-street*. Where also these Numbring Rods, (commonly call'd *Napier's Bones*) are made and sold.



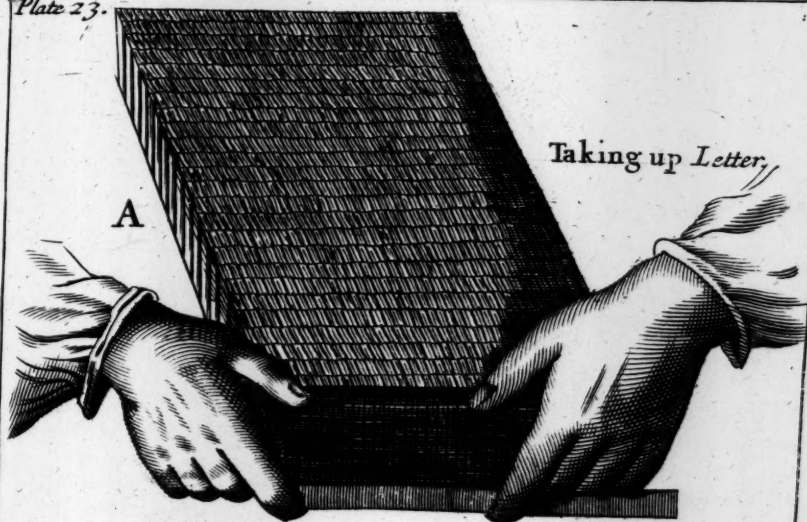
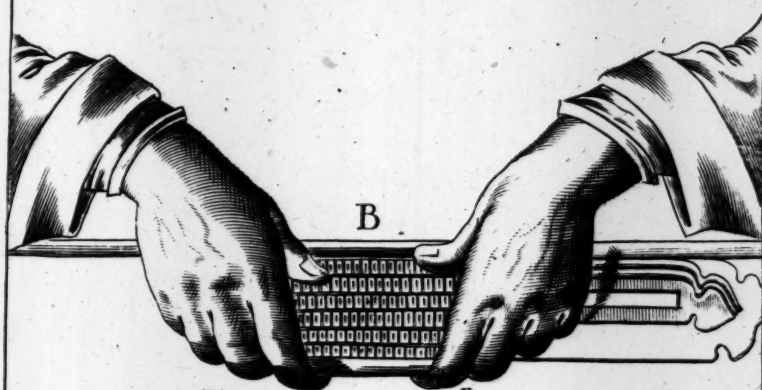
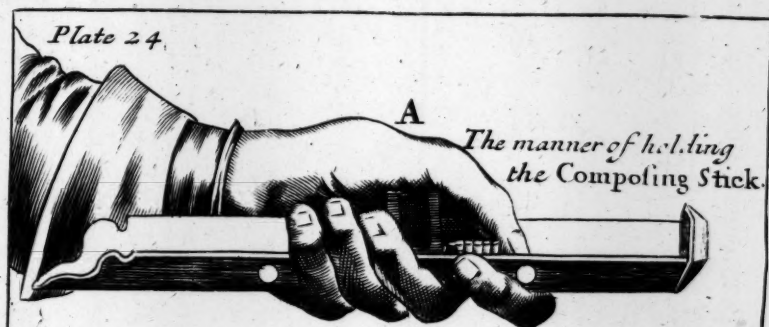




Plate 24.



The manner of Emptying  
a Stick of Letter.





Plate 25.

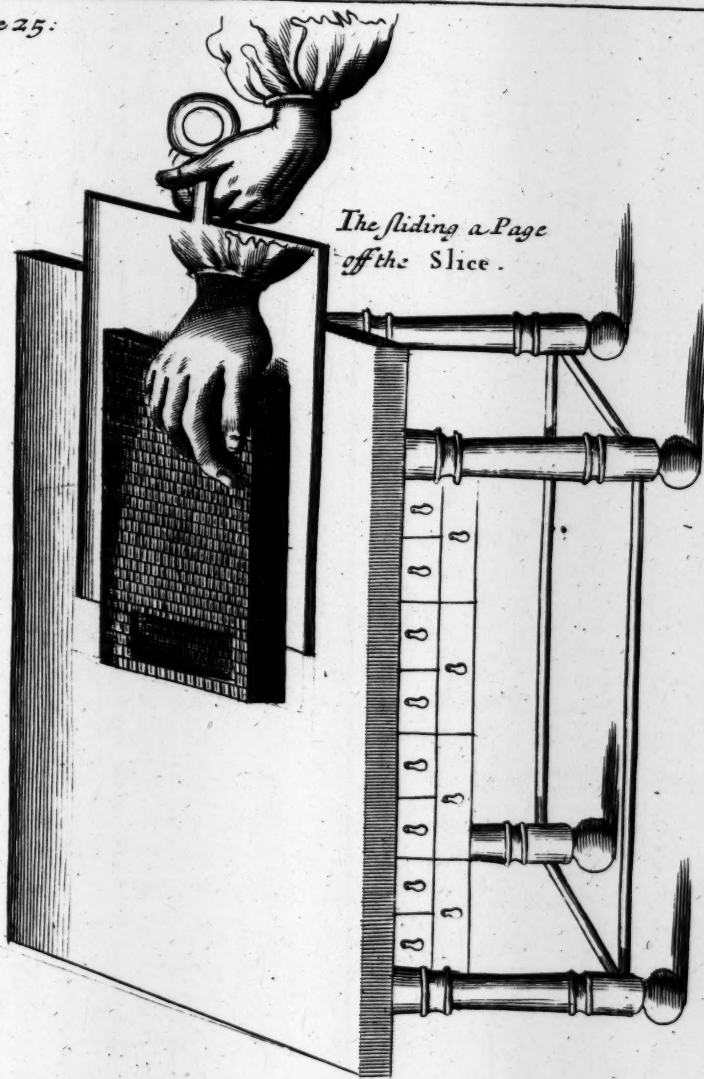




Plate 26.

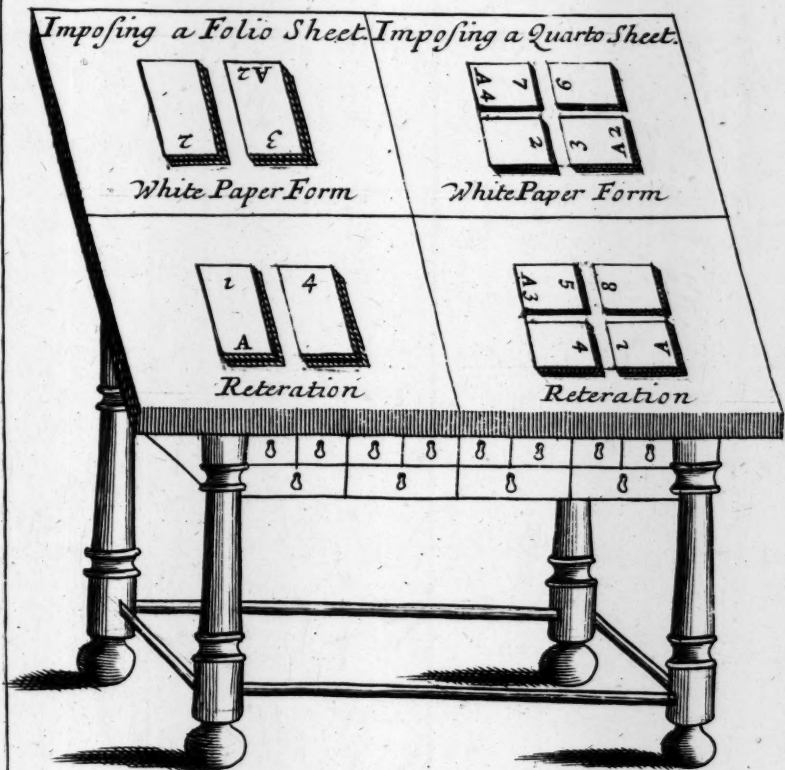






Plate 27

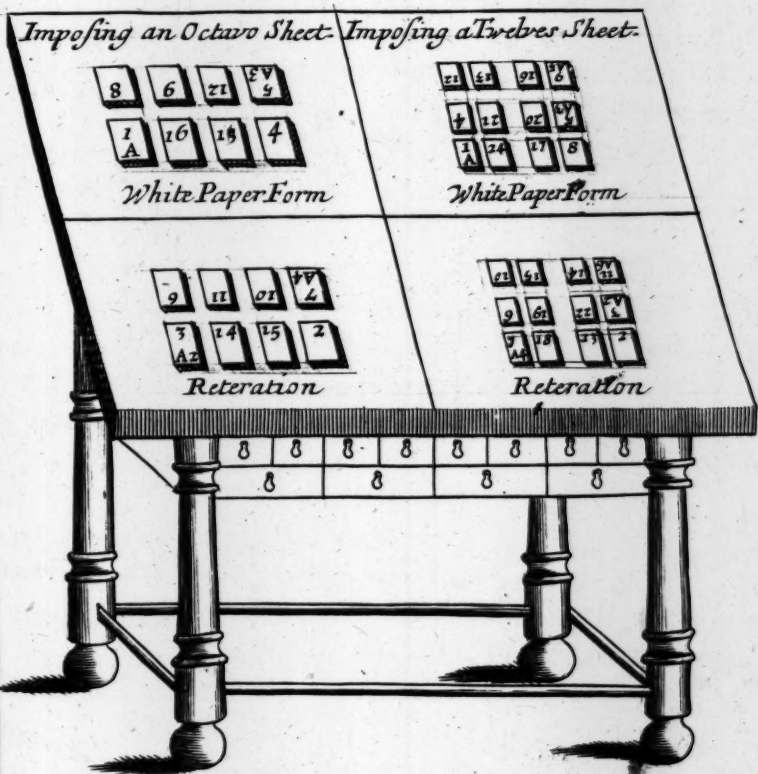
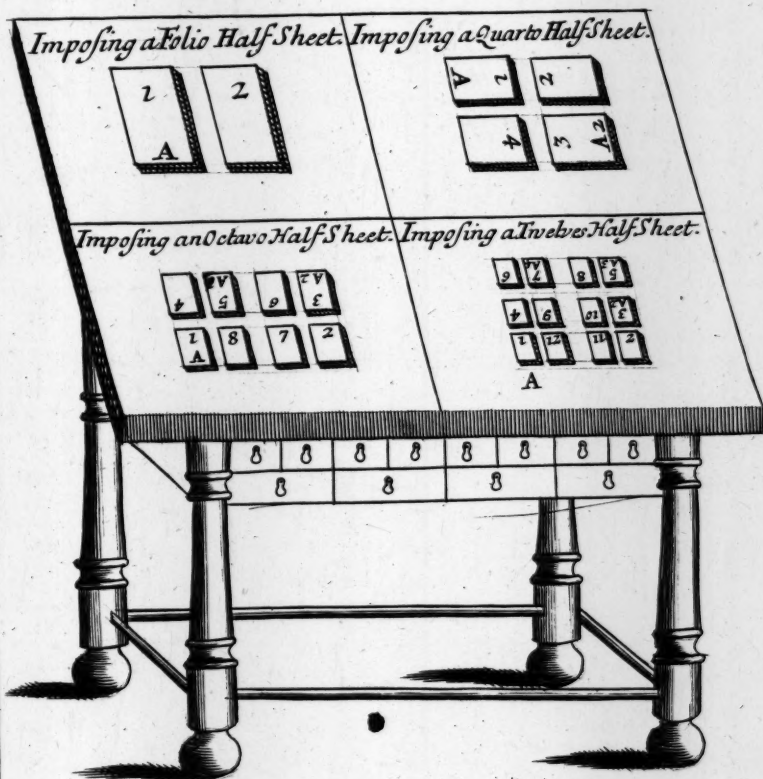




Plate 28.





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**MECHANICK EXERCISES :**

Or, The Doctrine of

**Handy-works.**

Applied to the

**Press-mans Trade.**

The Second VOLUME.

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**P R E F A C E.**

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**T**HE Printing-Press that a Press-man works at, is a Machine invented upon mature consideration of Mechanick Powers, deducted from Geometrick Principles ; and therefore a Press-man indowed with a competency of the Inventers Genius, will not only find great satisfaction in the contemplation of the harmonious design and Make of a Press, but as often as any Member, or part of it is out of order, he will know how to remedy any deficiency in it. This  
O o alone



alone will intitle him to be an *Understanding Press-man* : But his care and serious industry in the *Physical and Manual performance of his Task*, must give him the *Reputation of a good and curious Work-man*.

§. 24. ¶ I. Of the *Press-mans Trade*.

**A**N understanding *Press-man* therefore knows not only how to direct a *Printers Joyner* to Set up and Fasten a *Press* when it is made, but also how to give a strange Joyner and Smith instructions how to make a *Press*, and all its parts, in a Symetrical proportion to any unwonted size, if in a strange place he shall have occasion to use it.

I have already at large insisted upon the dimensions of every particular Member of an ordinary siz'd *Press* in § 10, 11. But in those Sections did omit shewing you how the *Press* is Set up and Fastened ; yet promised to do it when I came to the *Press-mans Trade* : It being not only a care incumbent upon him, but a Curiosity he would assume to himself to direct and see the Joyner set and fasten it in a Steddy and practical position. We will suppose a strange Joyner, and not a *Printers Joyner* (as here in *London* he may be furnisht with) who generally by their constant conversation in *Printers work*, do or ought to know as much of Setting up a *Press* as the *Press-man* himself.

The Joyner therefore having set together the Frame, viz. the *Cheeks, Feet, Cap, Head, Till, Winter, Hind-Posts, Ribs, Carriage, &c.* The *Press-man* directs, and sees him perform as follows by and by.

by. For I should have told you that before the *Head* is put into its place, the *Press-man* besmears the whole Tennanted ends and Tennants well with Soap or Grease, and also the Mortesses the *Head* slides in, and so much of the *Cheeks* as the ends of the *Head* work against, that the *Head* may the easier work up and down.

He also before the *Carriage* is laid on the *Ribs*, besmears the two edges of the *Plank* and the under side of the *Coffin* well with Soap or Grease; and the like he does by the inside of the *Wooden Ribs*, that they may slide the easier beside each other.

Now to return to the Joyner. The *Press-man*, I say, directs and sees him perform as follows.

1. To place the *Feet* upon an Horizontal Level Floor, as I shewed in the First Volume, Numb. 7. § 7. when I spoke of the Level that Carpenters use.

2. To erect the *Cheeks* perpendicularly upright, as I shewed Vol. 1. Numb. 7. § 8. when I treated of the *Plumb-line*.

3. To place the *Stays* or *Braces* so as the *Press* may be kept in the most Steddy and Stable position, as well to give a check to the force of the hardest *Pull* he makes, as to the hardest Knock the *Bar* shall make against the farther *Cheek*, if by chance (as sometimes it does) it slip out of the *Press-mans* Hand.

This consideration may direct him to place one *Brace* against the end of the *Cap* that hangs over the hither *Cheek*, and in a range parallel with the fore and hind side of the *Cap*: For the more a *Brace*

stands aslope to the two parrallel sides, the less it resists a force offered to the end of them, viz. the hither end of the *Cap*, which is one main *Stay* to the whole *Press*.

If he place another *Brace* against the hinder corner of the farther end of the *Cap*, it will resist the *Spring* of the *Bar*, if it slip out of the *Press-mans* Hand.

And if he places two other *Braces*, one against the hither corner of the hind-side of the *Cap*, and the other against the farther corner of the fore-side of the *Cap*, the *Press* will be sufficiently *Braced-up*, if the Room will afford convenience to place the farther end of the *Braces* against.

By convenience I mean a firm solidity to place the end of the *Braces* against, be it either a Stone-wall, Brick-wall, or some principal Post, or a Girder, &c. that will not start or tremble at the force of a *Pull*.

The *Braces* ought to be straight, and of Substance strong enough proportionable to their Length: And if convenience will allow it to be fixed in such a position that they stand in the same straight Line with the upper Surface of the *Cap*, viz. that the farther end of the *Brace* neither dips lower or mounts higher than the upper side of the *Cap*. Neither ought the *Brace*, though thus posited, to stand aslope or askew, viz. make unequal angles with the side of the *Cap* it is fastned to, but it ought to stand Square, and make right angles with the respective side of the *Cap*; because in those Positions the *Braces* best resists the force of continued *Pulls*.

But

But though this be by the Rules of Architecture, the strongest, firmest, and most concise method for *Bracing-up* a *Press*, yet will not the Room the *Press* is to stand in always admit of convenience to place the *Braces* thus: Therefore the *Press-man* ought to consider the conveniences of the Room, both for the places to fit the *Braces* to, and the positions to set the *Braces* in; placing his *Braces* as correspondent as he can to these Rules.

If he doubt the crazy make of the *Winter*, he will cause two *Battens* of three or four Inches broad, and a full Inch thick, to be nailed close to the outer sides of the Feet of the *Press*, which will both strengthen the *Winter*, and keep the lower part of the *Cheeks* from flying out, and also hinder the *Press* from working into a twisting Position.

And though I am loath to name the *Under-laying* of the Feet, because at the best it is but a *Botch*, and Subjects the whole *Press* to an unstable position yet because by accident it may happen, the aforesaid *Battens* will also keep these Underlays from working out.

Joyners that Work to Printers have got a Custom to place a strong Piece of Timber between the middle of the *Cap* and the Ceiling or Roof of the Room, which can do no service there, unless they intend to support the Roof: For the weight of the *Press* alone will keep it close to the Floor, and the strength of Stuff between the Mortesses in the *Cheeks* and the ends of them, are intended to be made strong enough to resist the Rising of the *Head*: For should that strength of Stuff start, neither their strong Piece of  
O o 3 Timber,

Timber, nor the strength of the Roof, would resist the Rising of the *Head*: but *Head* and *Cap*, and Timber and Roof too, would all start together, as by experience I have seen. For indeed the strength of Stuff between the Mortesses that the Tennants of the *Head* works in, and the upper ends of the *Cheeks*, and the Strength of Stuff between the Mortesses that the Tennants of the *Winter* lyes in, and the lower ends of the *Cheeks* resist the whole strength of the working of the *Spindle* out of its *Nut*. So that the *Cap* suffers no pressure upwards or the *Feet* downwards, unless the force of the *Spindle* break the strength of Stuff between the *Head* and the upper ends of the *Cheeks*, or the strength of Stuff between the *Winter* and the lower ends of the *Cheeks*.

The *Press* being thus far fastned, the *Carriage* is laid on; and if the Joyner performed his Work well in making the Wooden-work, it will at first lye exactly Horizontal; if not, it must be mended where it is amiss before the *Press-man* can Lay the *Stone*; and before the *Stay* of the *Carriage* can be fitted under the end of the *Ribs*.

## ¶ 2. Of Laying or Bedding the Stone.

We will suppose the Wooden *Ribs* to lye on the *Winter* exactly, flat and Horizontal, therefore the *Press-man* now Lays the *Stone*: If the *Stone* be a good thick Marble Stone, and all the way of an equal thickness between the *Face* and the Bottom, he may *Bed* or *Lay* it upon so many large *Sheets* of Brown Paper as will raise the *Face* about a *Brevier*



vier above the Superficies of the *Coffin*, and the *Stone* will do good service.

Or he may *Bed* or *Lay* it on *Bran*; which indeed the *Press-man* most commonly does, if the *Stone* be qualified as aforesaid.

The manner how he lays it on *Bran* is thus,

He grasps an handful of *Bran* and lays it down at the hither corner of the *Coffin* on his Left Hand, and it will form it self into a small *Hillock*; then he takes another handful of *Bran*, and lays that down in the same manner near the first, towards the further side, and so a third, &c. towards the further side, till he have filled the whole breadth of the *Coffin*. Then he in like manner lays another row of *Hillocks*, beginning at the hither side of the *Coffin*; and so a third and fourth row, &c. till the length of the *Coffin* is filled as well as the breadth: Then with a *Riglet* he drives the tops of these *Hillocks* into the *Valleys* between them, to spread the *Bran* into an equal thickness in the whole *Coffin*. Which done, he lays the *Stone* upon it.

But in this case he considers to lay so much *Bran* thus into the *Coffin* as may make the *Face* of the *Stone* rise about a *Great Primer* higher than the Superficies of the *Coffin*: For else he must take all his *Bran* out again, and new-lay his *Hillocks*, making them bigger or less, till he have fitted the *Face* of the *Stone*, to lye about a *Great Primer*, as aforesaid, higher than the Superficies of the *Coffin*.

But if it be a thin *Stone*, or a *Parbeck* or *Portland Stone*, it is great odds if it be thus *Laid*, but it breaks with the first *Pull*: Therefore these *Stones* are



are generally *Laid* or *Bedded* with *Plaster of Paris*, which before it hardens, will of it self run into an Horizontal position.

This *Plaster of Paris* is tempered with fair Water to the consistence of Batter for Pancakes, or somewhat thicker, and such a quantity is put into the *Coffin* as may raise the *Face* of the *Stone* about a Scaboard higher than the Superficies of the *Coffin*.

The different matter the *Stone* is *Laid* on is the reason why the *Face* is *Laid* of different heights above the Superficies of the *Coffin*: For by the force of a *Pull* about a dozen Sheets of Brown Paper may be squeeze'd closer by a *Brevier Body*, which brings the *Face* of the *Stone* into the same Level with the Superficies of the *Coffin*. And Bran squeezes much more. But *Plaster of Paris* not at all.

When he *Lays* the *Stone* on Bran, or on *Plaster of Paris*, he and his Companions slings the *Stone* in two strong Packthreads, placing one towards either end of the *Stone*; and each of them taking an end of each String in each of their Hands, with the *Face* of the *Stone* upwards, and brought as near as they can into an Horizontal Position, they with great care and caution let it into the *Coffin*, and as near as they can, so as the whole bottom of the *Stone* touch the *Bedding* all at once; left by raking the *Bedding* with any part of the bottom of the *Stone* first, the Horizontal form of the *Bedding* be broken.

Having laid the *Stone* down, they draw the Packthread from under it: And by squeezing a little Water out of a Sponge upon about the middle of the *Face*  
of

of the *Stone*, try whether the *Stone* lye truly Horizontal, which they know by the standing of the Water: For if the Water delate it self equally about the middle of the *Stone*, the *Stone* lies Horizontal: But if it have a propensitude to one side more than another, the declivity is on that side, and the *Stone* must be new Laid.

Having laid it Horizontal, they *Justifie* it up with the *Justifiers* I mentioned in § 11. ¶ 17.

¶ 3. Of Setting the Rounce.

The *Rounce* being well Set does not only ease a *Press-man* in his Labour, but contributes much to Riddance in a train of Work.

In the old-fashioned *Presses* used here in *England*, the *Press-man* finds often great trouble and loss of Time in Setting the *Rounce*: Because the *Girts* being nailed to the *Carriage-board* behind, and to the Frame of the *Coffin* before, he cannot alter the position of the *Rounce* without un-nailing and nailing the *Girts* again, both before and behind. Nay, and sometimes though he thinks he has been very careful in Winding the *Girts* off or on the *Barrel* of the *Rounce*, as he finds occasion requires; Yet by straining either of the *Girts* too hard, or not hard enough, or by an accidental slip of either of the *Girts*, or by stirring the *Rounce* out of a Set position, when he thinks he has Set the *Rounce*, he has it to do again. Besides, The *Carriage-board*, *Frame* of the *Coffin*, and the *Rounce-barrel*, all suffer tearing to pieces by often drawing out and driving in o. Nails.

P p

But

But in these new-fashioned *Presses* all these inconveniences are avoided, for the *Press-man*, without nailing or un-nailing, *Sets* the *Rounce* to what Position he will; only by lifting up the *Iron Clicker* that stops the wheel: For then *Winding* off so much *Girt*, and *Winding* up so much *Girt* at the opposite end of the *Carriage*, his *Rounce* is *Set*, without hope or Hazzard.

He *Sets* the *Rounce* to such a position, that when the fore-end of the *Tympan* will just lye down and rise free, without touching the fore-edge of the *Plattin*, then a line drawn or imagined from the Axis of the *Handle* of the *Rounce*, to a Perpendicular or *Plumb-line*, let fall from the Axis of the *Spindle* of the *Rounce*, these two lines shall make an angle of about 45 degrees, which is half the Elevation between an Horizontal line, or Line of Level, and a Perpendicular, or *Plumb-line*.

#### ¶ 4. Of Hanging the Plattin.

When the *Press-man* Hangs the *Plattin*, he lays a *Form* upon the *Press*, and about a *Quire* of Paper doubled upon it (this *Quire* of Paper thus doubled is called the *Cards*) then layes the *Plattin* upon the *Cards*, and so *Runs* the *Carriage* and *Plattin* in, till the middle of the *Plattin* lye just under the *Toe* of the *Spindle*: Then he puts the *Pan* of the *Plattin* in its place, and in part Justifies the *Head*, as shall be shewed in the next ¶. And he un-screws the *Hose-screws*, till the *Squares* at the ends of the *Hose* come down to about a quarter of an Inch of the Square of the

the Socket they are fitted into in the ends of the *Garter*, and when the *Toe* of the *Spindle* is fitted into the *Nut* in the *Pan* of the *Plattin*, he examines by straining a Pack-thread against the two foresides of the *Cheeks* of the *Press*, whether the fore-edge of the *Plattin* is set in a parallel Range with the fore-sides of the *Cheeks*: If it be not, he twists the ends till the edge of the *Plattin* stands parallel with the Pack-thread, and consequently with the *Cheeks*.

Then with the *Bar* he Pulls the *Spindle* hard down upon the *Plattin*, and Sets the edges of a *Paper-board* between the *Bar* and the farther *Cheek* of the *Press*, to keep the *Bar* from starting back.

And having provided fine Whip-cord, he knots a Noose on one end and puts it over one of the *Hooks* of the *Plattin*, lashing the Whip-cord also upon the farthermost *Notch* of the *Hose-hook*, and again upon the *Plattin-hook*, and again upon the *Hose-hook*, and again upon the *Plattin-hook*: So that here is now three Lashes of whip-cord upon the *Plattin-hook*, and upon the farthermost *Notch* of the *Hose-hook*. Wherefore he Lashes his fourth Lashing of whip-cord now upon the second *Notch*, viz. the middlemost *Notch* of the *Hose-hook*, reiterating these Lashes on the middlemost *Notch* and *Plattin-hook* also three times. And thus in like manner Lashes also three Lashes upon the third and last *Notch* of the *Hose-hook* and also of the *Plattin-hook*, observing to draw every Lashing of an equal strength.

Then he begins to whip about these Lashings to draw them close together: He begins, I say, at at the bottom of the Lashings, viz. close above the

*Plattin-book*, and draws his whippings very tight and hard, and contiguous above one another, till he have whipt so near the top of the *Lashings*, viz. near the *Hose-books* that he finds the *Lashings* (which now spread wide asunder because the *Notches* of the *Hose-books* stands far asunder) will yield no longer to to his whipping and pulling : So that now he fastens his whip-cord with two or three hard knots, and cuts it from the *Coyl*.

In like manner he begins at the opposite diagonal corner of the *Plattin*, and lashes and whips that : And also the two other corners of the *Plattin* as he did the first, carefully observing to draw all his lashings and whippings of an equal strength, lest any corner of the *Plattin* either mount or dip.

If he finds he strained the whip-cord not hard enough ; or (when he is in his train of work) that the *Plattin-cords* with long working work loose ; or that the *Toe* of the *Spindle* and the *Nut* it works in, have worn one another ; he by turning the *Screws* at the upper ends of the *Hose*, draws up the *Nut* of the *Plattin* closer to the *Toe* of the *Spindle*, and by consequence strains the *Plattin-cords* tighter up ; which is also a great convenience in these new-fashioned *Presses* : For, for any of these aforesaid accidents the *Press-man* that works at our *English-Presses* must new Hang his *Plattin* : When (as aforesaid) in these new *Presses* he only turns about a *Screw*.



## ¶ 5. Of Justifying the Head.

*Justifying the Head* is to put into the Mortesses in the *Cheeks* between the upper sides of the Tennants of the *Head*, and the upper sides of the Mortesses in the *Cheeks*, an equal and convenient thickness of (either) square pieces of Felt, Pastboards, or Scaboards (some or all of them) that when the *Press-man Pulls*, the Tennants of the *Head* shall have an equal Horizontal level Check.

In *Justifying the Head*, the *Pull* is to be made *Longer* or *Shorter*.

If the *Press-man* be tall and strong and his work be *Light*, that is, a small *Form* and great *Letter*, which needs not so strong a *Pull* as a Large *Form* and small *Letter*, he covets to have a *Short-pull*; that is, that the *Spindle* shall give an *Impression* by that time the *Bar* comes but about half way to the hither *Cheek* (in Printers Language *Down*.)

But if the *Press-man* be low, and not very strong, he will require a *Longer Pull*, especially if the work be *Heavy*, viz. a Large *Form* and small *Letter*: Because the height of the *Bar* is generally made to lye at the command of a reasonable Tall man, and therefore a Low man cannot Pull the Handle of the *Bar* at so great a force at Arms-end as a Tall man; but will require the swinging of his whole Body backwards to add force to the *Pull*: So that if the *Pull* be not *Longer*, he cannot fall enough backwards to get the *Handle* of the *Bar* within his command and force. And therefore a Low man and *Heavy Work* requires a long and *Soaking Pull*.



A long or a *Soaking* or *Easie Pull*, is when the *Form* feels the force of the *Spindle* by degrees, till the *Bar* comes almost to the hither *Cheek* of the *Press*, and this is also call'd a *Soft Pull*; because it comes Soft, and Soakingly and easily down: And for the contrary reason the *Short Pull* is call'd an *Hard Pull*, because it is suddenly perform'd.

That which makes a *Hard Pull*, is putting into the Mortesses in the *Cheeks* solid Blocks of Wood, which will scarce Squeeze by the Strength of a *Pull*: And that which causes a *Soft Pull* is putting in pieces of Felt or Pastboard (as aforesaid) which being Soft will Squeeze and retain their Spring for a considerable time, yet will at length grow hard with Working, and then the *Pull* grows *Longer*; which the *Press-man* mends, by putting in another Felt or Pastboard into each Mortess.

The *Head* cannot be conveniently and well *Justified* soon after the laying of the *Stone*, if it be *Laid* on Bran, because though the Force of the *Spindle* will at the immediate time of the *Pull* Squeeze the Bran in the *Coffin* close, yet so soon as the force of the *Spindle* is off the Bran, all its dry parts, by their several irregular positions, will like so many Springs, at the same moment of time endeavour to recover their Natural tendency, and heaves the *Stone* upwards again: So that generally for a day or two Working the *Stone* will not lye Solid, though at length through the often and constant Squeezing the Bran it will. But if the *Stone* be *Laid* on Brown Paper, or Plaster of Paris, it quickly finds a Solid Foundation.

When the *Press-man* *Justifies* the *Head*, he unscrews

scrows the *Female Screws* of the *Head Screws*, that the weight of the *Head* may draw it down, to make room to put the *Justifiers* into the *Mortesses* in the *Cheeks*; and when he has put in so many as he thinks convenient, he *Screws* up the *Head* again as hard as he can. Then lays the *Cards* on the *Form*, on the *Press*, and *Runs* in the *Carriage* under the *Plattin*, and *Pulls* hard upon it, while his *Companion* *Screws* up the *Head* as hard and tight as he can, that the *Carriage*, *Tympan*, &c. may *Run* the freelier under the *Plattin*.

¶ 6. Of Oyling the *Iron Work* of the *Press*.

The *Ribs*, the *Tympan Joynts*, the *Frisket Joynts*, the *Garters*, both ends of the *Rounce-Spindle*, the *Nut* and *Spindle*, and the *Toe* of the *Spindle*, are all to be well Oyl'd; that they may all perform their several offices the easier, lightlier and nimbler; both *Upper* and *Under hand*.

All but the *Nut* and *Spindle*, and *Toe* of the *Spindle*, are Oyl'd with a Feather dipt in a spoonful, or little Pot, or Oyster-shell, &c. of Sallad Oyl; and that feather dabb'd upon so much of the *Ribs* as he can come at, at either end of the *Press*: For then by *Running* the *Carriage* three or four times quick *Out* and *In*, it desperes the Oyl equally the whole length of the *Ribs*, and at the same time Oyls the *Cramp-Irons*.

And for Oyling the *Joynts*, he commonly takes out the *Pins* and Oyls them, and puts them in again; and with the edge of a Feather dabs a little

little Oyl between the Crevices of the *Joynts*.

He thrusts the Feather in between the *Spindle* of the *Rounce* and its *Collers*.

To Oyl the *Nut* and *Spindle*, he pours a good quantity of Oyl in at the *Hole* in the *Head*, and with a *Cork* stops the hole again to keep out dust and filth: Then drawing the *Bar* quick to and fro about half a score times, he works the Oyl equally about the *Nut* and *Spindle*.

To Oyl the *Toe* of the *Spindle*, he pours about a Spoonful of Oyl into the *Plattin-pan*.

#### ¶ 7. Of Making Register, and Making Ready a Form.

A curious *Press-man* will take care that against the *Compositer* brings a *Form* to the *Press* his *Press-stone* be wip'd very clean; for if any (though small) hard extuberant matter lye on it, the *Letter* that lyes on that extuberant matter will, with *Pulling*, quickly *Rise*, and not only Print harder than the rest of the *Form*, but bear the force of the *Plattin* off of the *Letters* adjacent to it. And therefore many times a *Press-man* will receive the *Form* from the *Compositer* when he has only Set the *Form* on the side of its *Chase* upon the *Press-stone*, that he may be the Surer the *Face* of the *Stone* is clean when he layes the *Form* down; as also that he may carefully examine that the backside of the *Form* is clean before he goes about to make *Register*, or otherwise make ready his *Form*.

*Making Register* is to *Quoin* up a *Form* and otherwise alter *Whites* (if need be) between the *Crosses* and *Pages*: So as that when a second *Form* of the same

*Volume, Measure and Whites*, is plac'd in the same position, all the Sides of each *Page* shall fall exactly upon all the Sides of the *Pages* of the first *Form*.

The first process a *Press-man* makes towards this Operation, is the chusing and placing of his *Points*: For to large Paper he chuses *Short Shanked Points*, and to small Paper *Long Shanked Points*, and proportionable to intermediate sizes of Paper: For his *Points* ought to be placed so as that when he is in his Train of work, they prick the *Point-holes* within the grasp of the hollow between his hand, Thumb, and Fore-finger; because when he shall Work the *Reteration* he may the better manage and Command the sheet he lays on the *Tympan* and *Points*.

Nor will he place his *Points* too near the edge of the *Paper*, because when he Works the *Reteration*, he would be forc'd to carry his furthestmost *Point-hole* the further from him, which in a long train of Work loses Time: For the *Laying Sheets* quickly on their *Point-holes* adds much to riddance. So also the less distance between the further and hither *Point-hole* makes more riddance than if they are far distant; because he must draw his Body so much the further back to place that *Hole* on its *Point*. Therefore he places the hither *Point* farther into the Paper than the farther *Point*, if it be *Folio*, *Quarto* or *Octavo*, but to *Twelves* equally distant from both edges of the Paper.

By placing the *Points* unequally from the edges of the Paper, as in *Folio's*, *Quarto's* and *Octavo's* (as aforesaid) he also secures himself the more from a *Turn'd Heap* when he works the *Reteration*; be-

cause without very much altering the *Quoins*, he shall not be able to make *Register*: And *Press-men* (especially if they Work upon the same sort of Work) seldom or never remove the *Quoins* on the further side the *Carriage*, nor on the right hand end of the *Carriage*, but let them lye as gages for the next *Form*: For thrusting the *Chase* close against these *Quoins*, the *Register* is almost (if not quite) made: The *Compositer* having before, according to his Task, chosen the *Chases* exactly of an equal size, and made strait and equal *Whites* between the *Crosses*, &c.

Having chosen his *Points*, he places them so that they may both stand in a straight line parallel with the top and bottom sides of the *Tympan*; which to know, he strains a Packthred cross the whole *Tympan*, laying it at once upon the middle of the *Heads* of both the *Point-Screws*, (for we will suppose the Joyner hath made the *Mortesses* into which the *Point-Screws* are Let, parrallel with both the ends of the *Tympan*) then if both the *Points* stand in that straight line they are parrallel, if not, he moves one or both of them upwards or downwards till they do, and then *Screws* them fast.

Then he layes the *Tympan* down upon the *Form*, holding the *Frisket-end* of it in his Left-hand, about an Inch or an Inch and a half above the *Face* of the *Letter*, and Sinks his Body downwards till he can see between the *Form* and *Tympan*, and with the Ball of the middle finger of his Right-hand presses a little gently upon the *Tympan* just over the *Point-ends* of each *Point* successively, to see if the *Points* fall in or near the middle of the *Slits* in the  
Short-



*Short-Cross.* If they fall exactly in the middle of those *Slits*, the *Form* lyes right between the middle of both the ends: If they fall not exactly in the middle of both these *Slits*, he moves the *Form* between the ends of the *Carriage*, till they do, and then *Quoins* up the two ends of the *Chase*.

Then laying the *Tympan* flat down upon the *Form*, he layes the *Blankets* in it: (They are call'd the *Blankets* though generally it is but one *Blanket* doubled :) Then he puts the *Iron-Pins*, fastned through the hither side of the Inner *Tympan* into the Holes made through the hither side of the outer *Tympan* for Gages: And turning about the Tongues of the *Iron-Buttons*, that are fitted into the outer Side of the outer *Tympan* over the upper Side of the Inner-*Tympan*, he *Screws* the *Button* fast down. He also *Screws* down the *Iron-Button* at the end of the *Tympan*. These *Buttons* thus *Screwed* down are to keep the Inner-*Tympan* fast in, that it Spring not upwards.

Then he *Folds* a sheet of the Paper he is to Work long-ways, and broad-ways, and lays the long Crease of it upon the middle of the *Long-Cross*; and the Short Crease over the middle of the *Gutters* of the *Short-Cross*, if the *Short-Cross* lye in the middle of the *Form*, ( for in *Twelves* it does not, but then he gueses at the middle ; ) then wetting his *Tympan* ( as shall in proper place be shewed ) he turns it down upon the Paper, and *Running* in the *Carriage*, *Pulls* that Sheet, which with the force of the *Pull* now the *Tympan* is wet, will stick to the *Tympan*; and turning up the *Tympan* again sees how well the Sheet was laid; that is, how even it was Laid: For

if it was laid even on the *Form*, the *Margin* about the out sides of all the outer *Pages* will be equal ; But if the Sheet be not laid even, he lifts it up Side by Side till he have loosen'd it from the *Tympan*, and removes it by his discretion till it be laid even : And then *Pulls* again upon it to fasten it to the *Tympan*. This Sheet is call'd the *Tympan-sheet*.

Then he lays another Sheet even upon the *Tympan-sheet*, for a Register Sheet, and a Waste Sheet over that to keep it clean from any filth the *Face* of the *Letter* may have contracted and imprint upon it, and *Pulls* these two Sheets. Then he *Runs out* the *Carriage*, and takes up the *Tympan*, and takes off the two Sheets, laying the waste Sheet by : But turns the other Side of the *Register-Sheet* the proper way his Volumne requires, *viz.* end-ways if it be *Octavo* or *Folio* ; or Side-ways if *Twelves* or *Quarto*, &c. as at large you see in the Section of *Imposing*. And laying the *Point-holes* in the *Register-Sheet* over the *Points*, lays his waste Sheet on again, *Runs-in* the *Carriage*, and *Pulls* upon that the Second side of the *Register-sheet*, to try how well the Impression of the Sides of all the *Pages* agree, and lye upon the Impression in the first *Pull'd* Side. If he finds they agree perfectly well, *Register* is made. But if the Impression of the last *Pull'd* Side of the *Register-sheet* stand be-hither the Impression of the first *Pull'd* side, either the whole length of the Sheet or part, he observes how much it stands be-hither : If the thickness of a *Scaboard*, a *Nomparell*, a *Long-Primmer*, &c. he loosens the *Quoin* or *Quoins* on the farther side of the *Carriage*, and opens one or both of them, *viz.* removes

moves them backwards till they stand a *Scaboard*, a *Nomparell*, a *Long Primmer*, &c. off the sides of their respective Corners: Then *Knocks* up one or both the opposite *Quoins*, till he have removed the *Chase*, and the *Chase* by consequence has forc'd the opened *Quoin* or *Quoins* close against their Corners. Or if the Impression of the last *Pulled Side*, stands within the Impression of the first *Pulled Side*; he observes how much also; and Loosning the hither *Quoin* or *Quoins*, and *Knocking up* the opposite as before, makes *Register*, for the Sides of the Sheet.

Then he observes how the *Register* of the *Head* and *Foot* agrees. And if he finds it agrees on both sides the *Short Cross*, he has good *Register*; supposing the *Compositer* has performed his Office, viz. made all his *Pages* of an equal Length, &c.

If the Impression of the Last *Pulled Sheet*, lye without the Impression of the first *Pulled Sheet*, towards the upper or lower end of the *Tympan*, he opens the *Quoins* at the respective end, and *Knocks-up* the opposite till he have made *Register*: Which to try he *Pulls* another clean *Register-sheet* as before. And if he finds *Register* agree on all the Sides of the *Form* the Task is performed: If not, he mends as aforesaid till it do.

But it sometimes happens that the *Compositer* has not made an exact equal *White* between all the sides of the *Crosses*: In this case, altering the *Quoins* will not make good *Register*; wherefore the *Press-man* observes which side has too much or too little *White*; and unlocking the *Form* takes out or puts in such a number of *Scaboards* as he thinks will make good

*Register* : which he tryes by *Pulling* a Sheet, and if need be, mending as before, till he have *Pull'd* a Sheet with good *Register*.

Although the *Press-man* have made *Register*, yet he must further *Make Ready* the *Form* before he can go to Work upon it. Under this phrase of *Making Ready the Form* is comprehended many Considerations, leading to several various Operations ; For first, The *Frisket* must be *Cut* : which to perform, the *Press-man* fits the *Match-Joynts* of the *Frisket* into the *Match-Joynts* of the *Tympan*, and pins them in with the *Frisket-pins*: And having *Beaten* the *Form*, turns down the *Frisket* and *Tympan* on the *Form*. And having also Rubbed the *Blankets* to soften them, lays them smooth and even in the *Outer-Tympan*, and Pins the *Inner Tympan* in upon them, as was shewed in the beginning of this ¶, and Pulls as before, and as shall farther be shewed in ¶ 15. upon the bare *Frisket*.

Then he *Runs out* the *Carriage*, and takes up the *Tympan* and *Frisket* together off the *Form* and lays them on the *Gallows* ; Then takes the *Frisket-pins* out again, and takes off the *Frisket* : And laying it flat on a *Paper-board*, with the point of a Pen-knife cuts through the *Frisket* about all the Sides of each *Page*, allowing to each *Page* he thus cuts out of the *Frisket* about a *Nomparil Margin* on all the sides of the cut cut *Pages* : Then he puts and pins his *Frisket* again on the *Tympan*, as before.

2dly, He takes care that the *Tympan* be well *Wet* ; which he does by squeezing Water out of a *Sponge* on the backside of it, till it be well *Wet* all over, and well soak'd and limber.

3dly,

3dly, That the *Form* be well and fast *Lock'd up*.

4thly, That no *Letters* or *Spaces* lye in the *White-lines* of the *Form*; which may happen if the *Compositer* have *Corrected* any thing since the *Form* was laid on the *Press*, and the *Compositer* through oversight pickt them not all up.

5thly, If any *Wooden Letters* or other *Cuts* be in the *Form*, that they be exactly *Letter-high* : If not, (for it seldom happens they are) he must make them so ; If they are too *Low*, (as they generally be) he *Under-lays* them : But first He examines how much they are too *Low*, by laying one *Card* or one *Scaboard* or two *Scaboards*, or a *Scaboard* and a *Card*, &c. upon the *Face* of the *Wooden Cut*, and gently feeling with the *Balls* of the *Fingers* of his right *Hand* if the intended *Under-lay*, viz. the *Scaboard*, *Card*, &c. lye exactly even with the *Face* of the *Letter*, If it do not, he tries thicker or thinner *Under-lays* till he have evened the *Under-lay* with the *Face* of the *Letter* : For then the *Balls* of his *Fingers* will go smoothly and equally over the *Under-lay* and the *Face* of the *Letter*, as if they were one and the same *Superficies*.

Having evened his *Under-lay*, he *Unlocks* that *Quarter* it is in, and takes the *Wooden Cut* out of the *Form*, and cutting a *Scaboard* or *Card* or what it wants a little smaller than the bottom of his *Wooden Cut*, he lays it into the place he took the *Wooden Cut* out of, or else he *Pasts* the *Under-lay* on the bottom of the *Wooden Cut*, and puts the *Wooden Cut* into its place again upon the *Under-lay*. But yet he trusts not to his *Judgment* altogether for the thickness.



ness of the *Underlay*: But *Locking up* the *Form* again, *Pulls* the *Cards* upon it to sink it as low as it will go, and *Beats* and *Pulls* a *Sheet* to see how it pleases him. If it be too low, which he finds by the *Pale Printing* of it, he *Underlays* it a little more, and again tries by *Printing* till it pleases him. But by no means he lets the *Cut* stand too high, though but a small matter, For then it will *Print* too *Hard* and too *Black*, and deface the beauty and fairness of the *Cut*; So that it may better stand about half a *Card* too low, than in the least too high.

If the *Wooden Cut* be too high, he causes a *Joyner* to *Plain* off some at the bottom.

6thly, If a *White Page* or *Pages* happen in a *Form*, and he uses a *New-drawn Frisket*, then he does not *Cut out* that *Page*: But if he *Work* with an *Old Frisket*, and that *Page* is already *Cut out*, he *Sews*, or sometimes *Pastes* on a *Scaboard*, if the *Page* be not too broad, or a strong *Pasteboard* to the *Sides* and *Crosses*, to cover the *White-page* in the *Form*, that it *Print* not *Black*.

If the sides of the *Pages* adjacent to the *White-page* *Print Hard*, as most commonly they do, because the *White-page* is generally lower than *Letter* high, so that the force of the *Spindle* squeezes the yielding *Paper*, *Tympan* and *Blankets* below the *Plain* of the *Face* of the *Letter*; and besides the force of the *Spindle* falling upon the center of the *Plattin*, and the *Plain* of the *Plattin* not finding resistance to entertain it equally, presses lower down upon the low *White-page*, than upon the *Face* of the *Letter*; so that the *Press-man* either *Underlays* the *White-page*,

page, as he does *Wooden Cuts*, or else he fits a *Bearer* on the *Frisket*.

The *Bearer* is a *Riglet* of a convenient thickness : and this convenient thickness the *Press-man* finds as I shewed you how he found the thickness of his *Underlays* for *Wooden Cuts* ; only with this difference, that as then he made his *Wooden Cut* exactly *Letter-high*, so now he makes his *Bearer* and the *Furniture* his *Bearer* bears on *Letter-high* : Wherefore he Pasts one side of his *Bearer*, and lays it as he would have it on the *Furniture*, with the Pasted side upwards ; and laying his *Tympan* and *Frisket* down upon the *Form*, with his Fingers presses on the outside the *Inner-Tympan Frisket* and all, upon the place where the *Beares* lies ; So that with the Paste the *Bearer* sticks to the side of the *Frisket*, which he takes up again : and if he thinks the Paste not strong enough to hold it till the *Form* is wrought off, he sews it to the *Frisket* by pricking his Needle on both sides the *Bearer*, and lashing the Thred over it so often till he thinks it fast enough sew'd on.

7thly, He examines whether the *Frisket Bites* not : That is, whether no part of it Print upon any of the sides of any of the *Pages* : if they do he cuts away so much and about a *Nomparel* more off the *Frisket* where it *Bites*.

8thly. He examines if the *Beards* of the *Letter* Print at the Feet of the *Pages* : If they do, He considers whether the too short or too far *Running* in of the *Carriage* causes it. Or whether it be only the *Beard* of a short *Page* that Prints ; If it be the *Beard* of a short *Page* that Prints, he remedies it with an

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*Under-*

*Under-lay* as I shewed he did in the *White Page*.

If the *Carriage* be *Run* in too short, and the *Feet* of the *Pages* stand towards the *Plattin*, the *Hind-side* of the *Plattin* will press strong upon the *Feet* of those *Pages* : And if the *Carriage* be *Run* in too far, the *Feet* of the *Pages* that stand towards the hinder *Rail* of the *Tympan* will most feel the force of *Plattin*, and according to a greater or less proportion of that force, and to the softness or yielding of the *Paper*, *Tympan*, and *Blankets*, and all other *Springs* in the *Press*, mentioned in §. II. ¶ 1. of this *Volume*, the *Feet* of the *Pages* and *Beard* of the *Letter* will more or less *Print Hard*.

Wherefore in this case he *Runs* the *Carriage* under the *Plattin*, till the farther *Edge* of the *Plattin* just cover the *Feet* of those *Pages*, and with a piece of *Chalk* makes a *White stroke* over the *Board* of the hither side of the *Carriage* behind, and the upper side of the *Rail* of the *Ribs* : Then he *Runs* in the *Carriage* again, till the *Fore-side* of the *Plattin* just cover the *Feet* of the *Pages* next the *Hind Rail* of the *Tympan*, and makes another mark with *Chalk* on the *Rail* of the *Ribs* to joyn with the mark he first made on the *Board* of the *Carriage*. Then he *Runs* out the *Carriage*, and lays the *Tympan* down on the *Form* ; and *Runs* in the *Carriage* again till he joyn the mark or line he made first on the *Carriage-board* and *Rail* of the *Ribs*, and makes a mark with *Chalk* on the farther *Rail* of the *Tympan* just range with the *Fore-side* of the *Plattin*. This mark on the *Tympan* shews him how far he must *Run* the *Carriage* in against the *Fore-edge* of the *Plattin* for the *First Pull*. Then he  
*Runs*

*Runs* in the *Carriage* farther, till he joyn the same Mark or Line on the *Carriage-board* to the second Mark he made on the *Rail* of the *Ribs*, and makes another Mark on the further *Rail* of the *Tympan* just range with the Fore-side of the *Plattin*, for the Mark he is no *Run* the *Carriage* in to against the Fore-edge of the *Plattin*, for his *Second Pull*.

9thly, He Examines if the *Catch* of the *Bar* will hold the *Bar* when the *Spindle* makes a small Spring, viz. When the *Bar* flies but a little way back from the pressure of the *Form*: If it will not, he knocks up the *Catch* a little higher till it will, and then Screws the *Screw* on the *Shank*, and consequently the *Catch* close and firm against the *Cheek* of the *Press*.

But if the *Catch* stand too high, so that it will not without a great Spring, (viz. when the *Bar* is *Pull'd* hard from the farther *Cheek*) fly up; He then knocks upon the top of the *Catch* to sink it lower; And when it is well fitted Screws it up again, as before.

If the *Catch* of the *Bar* stand too Low, it will not hold the *Bar*; But it will *Come down* again of it self when he is in his train of Work: For if, as it often happens, he lets the *Bar* fly harder than ordinary back, or if it slip out of his Hand, it will knock hard against the *Cheek*, and Spring back again.

If the *Catch* of the *Bar* stand but a little too High, the Violence of the *Bars* flying back to make it stick on the *Catch* will soon Loosen the Square of the *Bar* in the *Eye* of the *Spindle*; and indeed subject the whole *Press* to an unstable condition.

This is another ease and convenience these New-fashioned *Presses* gives the *Press-man*: For in the Old

make of the *Press*, when the *Catch* of the *Bar* holds too hard, or too soft, he is troubled to Raise or Sink the *Catch* with the thickness of *Scaboards*, which being indivisible, does not without trouble or luck justen it to an exact Heighth. And besides, These *Under-lays* being but put under the *Catch* upon the *Wooden Bearer* without any Fastning, are very subject to work out by the constant disturbance the motion of the several Parts of the *Press* (when at work) gives it : Or else (which is worse) he many times is forced to batter the *Cheek* of the *Press*, with drawing and driving of Nails out and in it, to fit on another *Catch* bigger or lesser, whereas here with a foster or an harder knock of the Hammer (as aforesaid) he Raifes or Sinks the *Catch*, and afterwards Screws it firmly up.

10thly, He considers whether the *Stay* of the *Frisket* stands neither too forwards or too backwards. The *Stay* may stand too forwards, though when it is leisurely turn'd up it stays the *Frisket* : Because, when the *Press-man* is in a Train of Work, though he generally throws the *Frisket* quick up with an accustomed, and as he intends, equal strength ; yet if his guess at strength in throwing it up varies, and it comes (though but a little) harder up, the *Batten* fastned on the *Cap*, and the Perpendicular *Batten* fastned to the aforesaid *Batten* (as is described in §. 11. ¶ 21. of this Volumn) will by their shaking cause a Spring, which will throw the *Frisket* back again upon the *Tympan* : Nay, though (as sometimes it happens) a solid Wall serves to do the Office of a *Stay* for the *Frisket* ; yet with a little too hard throwing it up, the



the *Frisket* it self will so shake and tremble (its Frame being made of thin Iron) from end to end, that e're it recover rest, its own Motion will by the quick running of a Spring through it beat it back again.

If the *Stay* stand too backward, then after he has given the *Frisket* a Touch to bring it down, it will be too long e're it come down, and so hinder his Riddance.

Therefore he places the *Stay* so, that the *Frisket* may stand but a little beyond a Perpendicular backwards, that with a near-guess'd strength in the tossing it up it may just Stand, and not come back ; For then with a small Touch behind, it will again quickly come down upon the *Tympan*.

11thly, He considers the Scituation of the *Foot-step*, and that he places so as may best suit with his own Stature ; For a Tall man may allow the *Foot-step* to stand farther off and lower than a Short, because his Legs reach farther under the *Carriage*, and can tread hard to add strength to his *Pull* ; when a Short man must strain his Legs to feel the *Foot-step*, and consequently diminish the force of his *Pull*.

12thly, He fits the *Gallows*, so that the *Tympan* may stand as much towards an upright as he can : Because it is the sooner clapt down upon the *Form* and lifted up again. But yet he will not place it so upright, but that the White Sheets of Paper he lays on it may lye securely from sliding downwards : And for *Reteration* Sheets their lying upon the *Points* secures them.

In these New-fashioned *Presses* there is no trouble to place the *Gallows*, so as it may mount the *Tympan*

to any Position : For sliding the *Male-duftails* made on the *Feet* of the *Gallows* through the *Female Dufails* faſtned on the *Planck* of the *Carriage*, performs this great trouble that in our *English Preſſes* requires Unnailing the *Studs* of the *Gallows* and Nailing them again; and many times tearing them and the *Carriage-Planck* to pieces : And that ſo oft as the fancy of the *Preſs-man* alters, or another *Work-man* comes to Work at that *Preſs*.

13thly, Few *Preſs-men* will Set the range of the *Paper Bench* to ſtand at right angles with the *Plank* of the *Carriage* : But draws the farther end of the *Paper Bench* ſo as the hither ſide may make an Angle of about 75 Degrees (more or leſs) with the hither ſide of the *Carriage* : The reaſon is, if the hither ſide of the *Paper Bench* ſtand at right Angles with the hither ſide of the *Carriage*, he muſt carry his Hand farther when he *Lays out Sheets* which would hinder riddance : Beſides his *Companion* has a nearer acceſs to it, to look over the *Heap*; which he frequently does, to ſee the conſtant Complexion of the Work.

14thly, The *Preſs-man* brings his *Heap* and Sets it on the hither end of the *Paper Bench* as near the *Tympan* as he can, yet not to touch it, leſt it ſtop the *Tympan* in a train of Work : and he places an end of the *Heap* towards him. Then taking off the *Paper-board* that cover'd it when it was Preſt, he lays the long ſides of it parallel to the ſides of the *Paper Bench* : Then he takes the uppermoſt Sheet (which as you may Remember is a *Waſte-sheet*) and lays it on the empty *Paper-board* ; And taking Three or Four or Five *Quires* off his *Heap* in both his Hands, he

he lifts it a pretty height above his Head, and claps it as hard as he can down upon the rest of the *Heap*, to loosen the Sheets that with Pressing stick close together : And not thinking them yet loose enough, he thrusts them long-ways and side-ways, heaving and huffing them till he think he has pretty well loosen'd or hollow'd that quantity of Paper.

Then with the nail of his Right Hand Thumb, sloping from his Thumbward, he draws or slides forwards the upper Sheet, and two or three more commonly follows gradually with it, over the hither edge the *Heap*, to prepare those Sheets ready for him to snatch off the *Heap*.

15thly, He considers if the *Face* of the *Tympan* be moist enough, for a *Tympan-sheet* to stick to, for though he Wet the back-side of it before to supple it, yet if the *Tympan* be strong, the Water will not soak quite through to moisten the *Face*, So that he wets the Sponge in fair Water, and besprinkles the upper side or *Face* of the *Tympan* all over : And squeezing the Water that is left in the Sponge well out again, rubs it quickly and gently all over the *Face* of the *Tympan*, to drink up or lick off the body of Water that he besprinkles on, and only leaves moisture on the *Face* of the *Tympan* to hold the Sheet.

Here accrews now a benefit by the make of these New-fashioned *Presses* to the Master Printer : For these *Presses* having a *Gutter* fastned to the *Hind-rail* of the *Carriage* (as was described in § 10. ¶ 9. of this Volume) to receive the Water that falls from the *Tympan*, and to convey it beyond the farther side of the *Press*, secures the *Blank* of the *Carriage* from

from Wet and moisture, and consequently from that cause of Rotting.

Then he takes a Sheet of Paper off the *Heap* for a *Tympan-sheet*, and Folds it exactly into four quarters, and lays the Creases of the Sheet exactly upon the middle of the *Short* and *Long Crosses*, if the Volume of the *Form* allows them both to be in their respective middles of the *Chase*; if not, he lays the Creases exactly against the Notches in the *Chase* that are made for them respectively: And if his *Frisket* be Blackt with former Work, he lays a Sheet of Waste-Paper upon the Creast-sheet: Then lays the *Tympan* down on the *Form*, and *Pulls* on these two Sheets, and takes up his *Tympan* again, and lays by the Waste-Sheet; but the Creast-Sheet he lays on the *Tympan*. But first presses the *Tympan* downwards, from under the Shank of each *Point* successively, puts the two opposite sides of the Sheet under the *Shancks* of the *Points*, and the *Holes* the *Points* prickt with *Pulling* exactly under the bottom Revits of the *Points*: Then taking a little Paste on the Ball of one of his fingers, a little besmeares the under corners of that Sheet, and claps them down close on the *Tympan*, that the Sheet may stick: But the bottom corner of that side the Sheet that is next to him, he besmeares within the Matter of the Sheet, viz. within the Impression the *Form* made. For when he has fastned that corner down, he tears off the *Margin*, (by guefs) in a straight line athwart the very corner, that it may not lye in his way to catch at as he *Takes off Sheets*, when he is in his train of Work.

This Sheet is called the *Tympan-sheet*; and is only  
as

as a standing mark to lay all the other Sheets exactly even upon, while he Works upon *White-paper*.

The *Press-man* does now suppose he has *Made Ready*: Yet for assurance he will try his *Register* once more, lest some of the *Quoins* should have slipt. How he made *Register* I shewed you before, wherefore if his *Register* be not good, he mends it as I there shewed. But we will suppose it now good, wherefore he gently *Knocks* up all the *Quoins* in the corners, with an equal force to fasten them.

Though I have in Numerical order set down these Operations, Circumstances and Considerations in this ¶: yet does not the *Press-man* oblige himself to observe them in this or any other orderly succession: Because it often happens that some of these Operations may more readily be performed out of this or any other prescribed Order.

¶ 8. Of Drawing the Tympan and Frisket.

*Drawing* the *Tympan* or *Frisket* is the Covering and Pasting on of Vellom, Forrels or Parchment upon the *Frames*. To each *Tympan* and *Frisket* is chose a Skin large enough to cover and lap about the *Frames*.

These *Skins* the *Press-man* rumples up together, and puts them into a Pail of fair Water to soak; and if he thinks they do not soak fast enough, he takes them and rubs them between his Hands, as Women wash Cloaths, to supple them, that the Water may Soak the faster in. And being thoroughly Soakt he wrings the Water as well out as he can.

Then the Boy having provided a Brush and about

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a Pint of PASTE, made of fine Wheaten Flower, well boiled in fair Water to the consistency of Hasty-pudding, he spreads the Skin flat upon a Table; and first Pastes the under Side of the *Tympan*; then lays it on the middle of the Skin, and rearing each side successively up, Pastes the Skin also from the insides the *Tympan* to the outer edges of the Skin, and lays the *Tympan* down flat again: Then he Pastes all the other sides of the *Tympan*, and wraps the Skin about the two long Sides first, Cutting the Sides of the Skin away so much, till he leaves only enough to reach almost quite through the under-sides of the *Tympan* again: Then drawing and straining the Skin tighter, he drives in the points of two-penny or three-penny Nails about six Inches distant from one another, to keep the Skin from starting as it Dries.

Having thus Drawn the sides, he with the Point of a Pen-knife cuts square holes in the Skin, just where the *Iron-Joynts* fall, for the Joynts to fall into, and Draws and Strains the ends of the *Tympan* as he did the Sides; wrapping the ends of the Skin under the under-sides of the *Tympan*, and where Wood is, drives in the points of Nails, as before.

Then setting it by to dry; when it is dry, he draws the Nails.

As he Drewthis *Tympan*, so he Draws the other: and the *Frisket* also: only, because he cannot drive in Nails, (the *Frisket* being all made of Iron) he doubles the Skin over the sides of the *Frisket*, and being well Pasted, as afore said; he Sews the sides that Lap over down upon the whole Skin, to keep it from starting while it dries: And he Pastes a Sheet

or

or two Thick of Paper all over the inside of it ; as well to strengthen as to thicken it.

¶ 9. *Of Wetting Paper.*

Paper is commonly *Wet* in a Tray full of fair Water. The *Press-man* places the length of the Tray before him ; his dry *Heap* on the Left Hand the Tray, and a *Paper-Board* with its Breadth before him on his Right Hand of the Tray : He lays first a Waste Sheet of Paper on the *Paper-board*, lest the Board might Soyl or foul the first Sheet of the *Heap*. Then he takes up the first *Token*, and lays it in such a position that the backs of the *Quires* lye towards his Right Hand, that he may the readier catch at the Back of each *Quire* with his Right Hand, when he is to *Wet* it : And he lays that *Token* athwart, or somewhat Crossing the rest of the *Heap*, that he may the easier know when he has *Wet* that *Token*.

Then taking the first *Quire* of the *Heap* with the back of it in his Right Hand, and edge of the *Quire* in his Left, he lays the *Quire* down upon the Waste Sheet, so, as that the back of the *Quire* lye upon the middle crease of the Waste Sheet, and consequently one half of the *Quire* already laid even down upon one half of the Waste Sheet. If the Paper be Strong, he opens about half the *Quire*, and turns it over dry upon the other half of the Waste Sheet : But if the Paper be Weak and Spungy, he opens the whole *Quire*, and lays that down Dry.

The reason why he lays the first Laying-down Dry, is, because it lying under the rest of the *Heap*

will sufficiently imbibe the moisture that Soaks from it: And the reason why he leaves but half a Quire Dry for strong Paper, and an whole for Spungy, is, Because Spungy Paper Soaks in moisture faster than Strong.

Having laid down his Dry Laying, he takes another Quire off the Dry *Heap*, with the back of the Quire in his Right Hand, and the edge of the Quire in his Left, (as before,) and closing his Hand a little, that the Quire may bow a little downwards between his Hands, he Dips the back of the Quire into his Left Hand side of the Tray of Water: And discharging his Left Hand of the Quire, Draws the Quire through the Water with his Right; but as the Quire comes out at the Right Hand side of the Tray, he nimbly catches the edge of the Quire again in his Left Hand, and brings it to the *Heap*, but by lifting up his Left Hand bears the under side of the Quire off the Dry Paper, laid down before, lest the Dry Sheet should stick to the Wet, before he have plac'd the Quire in an even position, and so perhaps wrinkles a Sheet or two, or else put a Dry Sheet or two out of their even position, on the sides or ends.

But this Drawing the Quire through the Water he performs either nimbly or slowly: If the Paper be Weak and Spungy, he performs it quickly; if Strong and Stubborn, slowly.

To place this Quire in an even position, he lays the back of the Quire exactly upon the opening crease of the former Quire, and then lets the side of the Quire in his Left Hand fall flat down upon the *Heap*; and discharging his Right Hand, brings it to the  
the

the edge of the *Quire*; and with the assistance of his Left Hand Thumb (still in its first position) opens or divides either a third or half of the whole *Quire*, according to the quality of the Paper, (as was said before,) and spreading the Fingers of his Right Hand as much as he can through the length of the *Quire*, turns over his opened division of the *Quire* upon his Right Hand side of the *Heap*.

The reason why he spreads the Fingers of his Right Hand as much as he can through the Length of the *Quire*, is, because the outside Half Sheet is Wet, and consequently quickly Limber, so that if the Paper be Weak, it would fall Down before the rest of his Opening, and double into wrinkles, which thus spreading his Fingers prevents.

In the same manner he Wets all the *Quires* of his Dry *Heap*. See Plate 29.

But having Wet his first *Token*, he doubles down a great corner of the upper Sheet of it on his Right Hand, so as the farther corner may lye a little towards the Left Hand of the crease in the middle of the *Heap*, and so as the hither corner may Hang out on the hither side of the *Heap* about an Inch and an half: This Sheet is called the *Token-Sheet*, as being a mark for the *Press-man* when he is at Work to know how many *Tokens* of that *Heap* is *Wrought-off*, and consequently to know how many is to Work.

When he has Wet the first *Token*, he removes the next uppermost Dry *Token* askew on the Dry *Heap*, and successively all the rest, as I shewed in the beginning of this ¶.

Having Wet the whole *Heap*, he lays a Waste

Sheet of Paper upon it, that the *Paper-Board* to be laid on, Soyl not the last Sheet of the *Heap*: Then three or four times takes up as much Water as he can in the hollow of his Hand, and throws and sprinkles it all over the Waste-sheet that it may moisten and Soak downwards into the un-wet upper part of the last Division of the *Quire*.

The Paper being thus Wet, he takes up the whole *Heap* upon the *Paper-board*, and sets it by in a convenient place of the Room, and lays another *Paper-board* upon it: And upon the middle of the *Paper-board*, sets about Half an Hundred Weight, and lets it stand by to press, commonly till next Morning: For *Press-men* generally Wet their Paper after they have left Work at Night.

The manner how Paper is *Set out*, shall be shewed when I come to the Office of the *Warehouse-keeper*.

#### ¶ 10. Of Knocking up the Balls.

*Ball Leathers* (as I said before in § 11. ¶ 21.) are either *Pelts* or *Sheep-skins*: If *Pelts*, they are chosen such as have a strong Grain, and the Grease well Wrought out of them: They are either Wet or Dry before they come to the *Press-mans* use: If Wet, he having before-hand provided a round Board, of about Nine inches and an half Diameter: Supposing the *Ball-stocks* to be six Inches diameter, lays the Round Board upon the whole *Pelt*, and cuts by the out-side of the Board so many round pieces as he can out of the *Pelt*, reserving two for his present Use.

And hanging the rest up (commonly upon the  
*Braces*



*Braces* of the *Press*) to dry, that they may not Stink or Mould before he have occasion to use them.

But if his *Pelts* are Dry, he lays them to Soak (by choice in Chamber-ly) but I never heard, or by my experience could find why it is preferred before Fair Water: For the purpose of Soaking them is only to supple them.

If he Work with Leather, It is chosen with a Strong and close grain: Wherefore by experience it is found that the Neck-piece, and indeed all along the back of the Skin is best; but is commonly subject to be greasie, which gives the *Press-man* sometimes a great deal of trouble, to make his *Balls Take*. He also lays the *Ball Leathers* in Soak to supple them.

When they (either *Pelts* or *Leathers*) are well Soaked, he Rubs them well with both his Hands, and then twists and wrings them (as Women do Cloaths) to get the Water out again.

When they are well wrung, he Sits down upon a Seat about fourteen or fifteen Inches high, commonly a *Heap* of *White Paper*, if it stand conveniently for him; but not upon a *Printed Heap*, least his Weight pressing it cause the un-dried *Inck* to *Set-off*: He sits down, I say, and lays the *Ball-stock* upon his a little opened Thighs near his Knees, that with closing his Thighs he may hold it in a Steddy position, and with the Handle of the *Bull-stock* towards his Belly. Then taking the *Ball-Leather*, helaps or Folds about three quarters of an Inch of one part of it over so much of it towards his Left Hand into a Plaight, and laying the edges of that Plaight towards him, an Inch above the edge of the *Ball-stock*, he with the Head of  
the:

the *Sheeps-foot* drives a *Ball-nail* into the middle of the *Plaight*, a little more than half an Inch above the edge of the *Ball-stock* : But he Drives the *Ball-nail* not quite up to the Head, but leaves about almost a quarter of an Inch of the Nail out ; that with the *Claw* of the *Seeeps-foot* he may Draw the Nail again when occasion serves.

Having driven the first Nail, he turns about the *Ball-stock*, till the opposite side, and as near as he can guess, point of the edge of the *Ball-stock* lyes directly upwards between his Thighs, (as before,) and then taking as near as he can guess the opposite edge of the *Ball-leather* between his Fore-fingers and Thumb of his Left Hand, he holds the edge of the *Ball-leather* upright, and having his Wooll or Hair Teized, lying by him on his right Hand on the Floor, he grasps at once as near as he can guess, so much as may just serve to fill his *Ball-leather* and the hollow of the *Ball-stock*; which bringing to the hollow of the *Ball-stock*, he draws the *Ball-leather* over it; and lapping the edges of the *Ball-leather* over, as before, makes another *Plaight*, and Drives another Nail, as before : So that here is now the two opposite Sides of the Leather Nailed on. Then he takes up the *Ball* by the Handle in his Left Hand, and observes whether the Wooll tend more to one than the other open half: If it do, he thrusts it with the ends of his Fingers of his Right Hand into the middle, or else over to the other Half, till the Wooll lyes equally on both the Halfs.

If he have put too much or too little Wooll into the *Ball*, he either takes some out, or adds more to, as the  
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the respective Half may require. Then lays it down again between his Thighs, as before, and lays another Plaight in the middle of the *Ball-leather* on one of the open Halves, and as near as he can guess, between the middle of the two opposite Nails; and Nails that Plaight down to the *Ball-stock*, as before.

In the like manner he Nails down the other open sides, (now Quarters,) and then again takes a View how the Wooll is disposed into the middle of the *Ball*; and where he finds it tend most to any of the open Quarters, he Drives the Wooll with the ends of his fingers, as before, or sometimes when the *Balls* have been Wrought with, and blackt with *Inck*, with the *Head* of the *Sheeps-foot* into the middle, and then Nails down as before all the open Quarters as near as he can guess; between the middle of his former driven Nails, and then again, takes another View as before, to see how the whole *Ball* pleases him.

If he finds any of the Plaights laid too near one another, he draws that Nail, and alters that Plaight, to lay it as near as he can by guess, in the middle between the next two Plaights.

Then he considers if his *Ball* be round: If it be not, he thrusts the Wooll from the bunching-out side, towards the wanting side, either with the ends of his Fingers, or the *Balls* of one of his Hands; while the Wooll is yet loose in the *Ball-stock*: For when the *Ball* has been Wrought withal, it will grow so hard, that the Wooll will not move out of its place.

Having *Knockt up* one *Ball* well, he *Knocks up* the other, as the first.

The *Balls* are well *Knockt up*, when the Wooll is equally disperfed about all the Sides, and the middle smoothly covered with the *Leather*, viz. not rifing in Hillocks, or falling into Dales, not having too much Wooll in them, for that will fubject them to foon hardning, and quickly be uneafie for the *Preſs-man* to Work with; or too little, for that will make the *Leathers*, as the Wooll fettles with Working foon flap, and wrap over it ſelf into Wrinkles. So that he cannot ſo well deſtribute his *Balls*: But the *Balls* ought to be indifferently plump, to feel like an Hard ſtuft Bed-pillow, or a ſtrong Spunge a little moiſtned with Water.

Having Knockt up the *Balls*, and Rub'd out the *Inck*, as ſhall be ſhewed in the next ¶, he tryes if his *Balls* will *Take*, that is, he Dabs the top of one of them three or four times lightly upon the hither part of the *Inck-block*: If he finds the *Inck* ſticks to it equally all about, and that ſo much as has toucht the *Inck-block* is Black, it *Takes*: But if ſcarce any of the *Leather* is Black, or that it be Black and White in Splotches, then the *Balls* does not *Take*: Wherefore he confiders whether his *Ball* be too Wet, or elſe Greafie, for each of theſe inconveniences will hinder the *Taking* of the *Ball*.

If it be too Wet, he burns half a Sheet or an whole Sheet of Waſte Paper, and waves his *Ball* to and fro over the flame of it; but ſo quick and cautiously that he neither ſhrinks the *Leather* or Dryes it too much: In Winter time when a fire is at Hand, he dryes it gently by the fire.

If it be Greafie, he with the edge of the *Ball-knife* ſcrapes

scrapes off the thick Oyl, that Works down out of the *Nut* and *Spindle* of the *Press*, or else with the point of his *Knife* takes a convenient quantity of Oyl out of the *Plattin-pan*, or for want of either takes fresh Sallad Oyl and smears and spreads it well all over the whole *Ball-leather*; and then holding the *Ball-knife* in his Right Hand, with its edge a little sloping downwards that it cut not the *Ball-leather*, and the handle of the *Ball-Stock* in his Left Hand, he joyns the bottom of the *Ball-leather*, viz. as near the outer edge of the *Leather* as he can, for the *Ball Nails* to the edge of the *Ball-knife*, and turning the *Ball* about by its Handle, presses it hard against the sloapt edge of the *Ball-knife*, and at once drives the laid on Oyl and Grease too before the sloapt edge of the *Ball-knife*; but he keeps the Handle of the *Ball-Stock*, and consequently the whole *Ball* too, constantly turning, that the whole circumference of the *Ball* may be *Scraped*: And as the *Ball* has performed a Revolution against the sloapt edge of the *Ball-knife*, he draws gradually his Left Hand a little backish, that the sloapt edge of the *Ball-knife* may by several Spiral revolutions of the *Ball*, scrape up to the very top of the *Ball*, and carries before it the Oyl and Grease thither: Which having there, he gathers up upon the *Blade* of his *Ball-knife* and disposes of it, as of so much Dirt and Filth.

After a due process of either of these Operations respectively, his *Ball* will *Take*, and he again dabs gently the top of his *Ball* three or four times on the *Inck-block* (as before) and finding it *Take*, he takes the Handle of it into the clutched Fingers of his Left Hand,



Hand, holding the *Ball-stock* juſt a little above the circle of his Fore-finger and Thumb, and grasps the Handle of the other *Ball-stock* into his Right Hand, with the circle of his Finger and Thumb upwards, and the now bottom of his Right Hand downwards, but not reſting upon the *Ball-stock*; and tryſ if that *Ball* will *Take*, by dabbing the Leather of it three or four times upon the other *Ball*: If it do not *Take* with dabbing, he twiſts the *Balls* in either Hand cloſe and hard, contrary to one another, to beſmear the upper with the under *Ball*. If after this, the upper *Ball* do not *Take*, he conſiders the cauſe, and remedies it, as he did the firſt *Ball*.

#### ¶ II. Of Rubbing out Inck.

Before the *Prefs-man* goes to Work, he Rubs out his *Inck*.

If the *Inck* have lain long on the *Inck-block* ſince it was *Rubbed out*, the Superficies of it generally is dryed and hardened into a Film or Skin, wherefore the *Prefs-man* carefully takes this Film quite off with the *Slice* before he diſturb the Body of the *Inck*: For ſhould any, though never ſo little of it, mingle into the *Inck*, when the *Ball* happens to take up that little particle of Filin, and delivers it again upon the Face of the *Letter*, it will be a *Pick*, and Print black, and deface the Work: And if it get between the Face of two or more *Letters*, or the *Hollows* of them, it will obliterate all it covers. And if it be *Pull'd* upon, and the *Prefs-man* not careful

careful to over-look his Work, it may run through the whole *Heap*.

Wherefore having carefully skinned off the Film with the edge of the *Slice*, he scrapes his *Slice* clean with the *Ball-knife*, lest some small parts of the Film should yet stick to, or remain on the *Slice*: And then with the *Slice* brings the body of *Inck* into the middle of the Plain of the *Inck-block*, and searches the sides of the *Inck-block*, by thrusting the edge of the *Slice* forwards along them and all the angles of the *Inck-block*, and so scrapes off all the *Inck* as clean as he can, and gathers it to the whole mass of *Inck*: Then with the *Slice* he turns the whole mass about half a score times over and over to mingle it well together, lest some part of it should be more consolidated than the rest: And to mingle it yet better, he then falls to *Rubbing* it with the *Brayer*, grasping the Handle of it in his Right Hand, he begins to *Rub* with all his strength at the hithermost side-boundings of the Body of *Inck*, and keeping *Rubbing* through the almost whole length of the *Inck-block*, he gradually proceeds to the farther side of the Body of *Inck*. In this manner of *Rubbing* he bears hardest upon the farther edge of the *Brayer*, because the hither sides of the *Inck-block* are not fenced in with Rails about them; and should he *Rub* with the bottom of the *Brayer* flat upon the *Inck-block*, he might draw too great a body of *Inck* to the unfenced sides; so that the *Inck* would be subject to run off: This *Rubbing* is only to spread the *Inck* pretty equally over the superficies of the *Inck-block*: Wherefore he now begins a circular *Rubbing*, observing in the cir-

culatation of the *Brayer* that he always a little mounts the part of the edge of the bottom, which in its progress is ready to approach a prominent body of *Inck*, that it may somewhat slide over it, that the *Inck* be not lickt up high on the sides of the *Brayer*.

Then with the Handle of the *Slice* in his Left Hand and the Handle of the *Brayer* in his Right, he joyns the bottom edge of the *Slice* to the side of the *Brayer*, holding the flat of the *Slice* Horizontal, and the bottom of the *Brayer* perpendicular both over the *Inck-block*, and keeping his *Brayer* and *Slice* in this position, by turning the *Handle* of the *Brayer* in his Right Hand, held pretty stiff against the edge of the *Slice*, he scrapes off all the *Inck* that the side of the *Brayer* has lickt up: And setting down his *Brayer*, he takes the *Slice* in his Right Hand and lays what *Inck* he scrapes off the side of the *Brayer* again upon the *Inck-block*, and *Slices* the whole mass of *Inck* into the farthest corner of the *Inck-block*.

This *Rubbing* of the *Inck* may serve when the *Inck-block* had *Inck* on it before.

But if no *Inck* were on the *Inck-block* before, then he lays new *Inck* on the *Inck-block*: Wherefore he considers what Work he Works on: whether it be small or great *Letter*: If it be small *Letter*, or curious Work, the *Inck* must be *Strong* he Works with: But if it be great *Letter* or sleight Work, he makes *Soft Inck* serve, or at least mingles but a little *Hard Inck* with it.

If the *Inck* be too *Hard*, as sometimes in very frosty Weather it will be, then, though his Work be curious, yet he must *Rub* in a little *Soft Inck* to soften it; because

because it will not else *Destribute* well upon the *Balls*; especially if the *Leathers* be a little too Wet, or a little Greasie : Besides, it may and many times does pull and tear the Grain off the Skin; which not only spoils the Skin, but fills the *Form* full of *Picks*.

Sometimes when he finds the *Inck* too pale, he *Rubs* in *Blacking*, but he first joults the bottom of the *Blacking Tub* three or four times against the ground, that if by chance any dirt or filth have gotten into it, it may sink to the bottom of the *Tub*.

But when he either mingles *Strong* and *Weak Inck* together, or else puts in *Blacking*, he applies himself again first to *Rubbing* with the *Brayer*, the length-way of the *Inck-block*, as before, and then to a circular *Rubbing*, as before; and to cleansing his *Brayer*, as before; and this long-ways *Rubbing*, circular *Rubbing*, and cleansing his *Brayer*, he reiterates so oft, till he judge the whole mass of *Inck* sufficiently *Rubbed* and mingled, and the *Blacking* perfectly imbibed by the *Inck* : And then he *Slices* the whole mass of *Inck* to the farthest corner of the *Inck-block*, as before.

#### ¶ 12. Of Destributing the Balls.

I shewed you in ¶ 10 of this § how he dabb'd the *Ball* on the *Inck-block*, to try if it would *Take* : And I shewed you in what Posture he handled the *Balls* when he tryed if the other *Ball* would *Take* : Therefore for *Taking Inck* and Handling the *Balls* I (to avoid tautology) refer you to that ¶.

Having now *Taken Inck*, and gotten the *Balls* in his Hands, in that posture, he Works them side-ways upon

upon one another to and from him, and with a craft (acquired by use) in the Handling of the *Balls*, all the while keeps the *Handles*, and consequently the whole *Ball-stocks* (both) turning round in his Hands and in a motion contrary to each other, *viz.* His under *Ball* moving from the Left Hand to the Right, and his upper *Ball* moving from his Right Hand to the Left; and by and by in a second motion contrary to the first, *viz.* his under *Ball* moving from the Right Hand to the Left, and his upper *Ball* moving from the Left Hand to the Right.

And these motions and Operations he continues so long till he judges, and in part perceives the *Inck* is equally *Distributed* all over the whole *Ball-Leathers*.

The first way of turning the *Ball Handles*, while the *Balls* are moved to and from him, is made by pressing the ends or Balls of the fingers of both his Hands upon the *Ball-handles* from-wards his Hands: And the second way of turning them contrary to the first, is made by gathering in the ends or Balls of his fingers while they are in their circular to and fro motion. But because in gathering in his fingers, he does somewhat dis-engage his grasp of the *Ball-Handles*, therefore he lightly and almost insensibly, tosses the *Ball-stocks* a little up, that when they are dis-engaged from a close grasp, his fingers ends may the easier draw the *Handles* towards him. This is a Hand-craft, which by continued use and practice, becomes familiar to his Hands.



¶ 13. Of Beating.

The *Press-man* imagines, or by his eye judges the length of his *Form* (be it what *Volumne* it will) divided into four equal parts or Rows, which four Rows for distinction sake, I shall number from the Left Hand to the right, with first Row, second Row, third Row, fourth Row, just as an *Octavo Form* is exactly divided by four Rows of *Pages*.

He places his Left Hand *Ball* at the hither end of the first Row, so that though the *Ball* be round, yet the square encompassed within that round shall sufficiently cover so much of the square of the hither end of that Row as it is well capable to cover ; and his Right Hand *Ball* he sets upon the hither end of the third Row : He sets his *Balls* close upon the *Face* of the *Letter*, with the *Handles* of the *Ball-stocks* a little bending towards him : But as he presses them upon the *Face* of the *Letter*, he mounts them perpendicular ; and lifting at once both the *Balls* lightly just clear off the *Face* of the *Letter*, he removes them about the fifth part of the breadth of the *Form* upwards, *viz.* towards the farther side of the *Form*, and again sets them close down upon the *Face* of the *Letter*, with the *Handles* of the *Ball-stocks* again bending a little towards him, as before : and as he presses them upon the *Face* of the *Letter*, mounts them perpendicular, as before : Thus in about four or five or six such motions, or rather removes of the *Balls*, according to the breadth of the *Form*, he *Beats* over the first and third Rows. Thus *Beating* from the hi-

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ther towards the farther side, is in *Press-mens* phrase called *Going up the Form*.

The reason why he bends the *Handles* of the *Ball-stocks* a little towards him, is, that the *Ball-leathers* drag not upon the *Face* of the *Letter*; for then the edges of the hollows between the *Lines* or *Words*, or the edges of the cavities below the *Face* would scrape *Jack* off the *Balls* to stop up or choak the *Form*. And the reason why (before he removes them) he mounts the *Handles* of the *Ball-stocks* a little perpendicular, is, that the *Balls* may touch in their greatest capacity upon the *Face* of the *Letter*.

To *Come down the Form*, he skips his *Balls* both at once from the first and third Row to the second and fourth Row, and brings them down as he carried them up; only, as before, he bended the *Handles* of the *Ball-stocks* a little towards him, so now he bends them a little from him: That the *Ball-leathers* (now *Coming down*) drag not, as aforesaid. Then in like manner he again skips the *Balls* from the second and fourth Row to the first and third Row, and again *Goes up the Form* with the *Balls*, as he did before. And then again skips, as before, and *Comes down the Form* again with the *Balls*.

Having thus gone twice upwards and twice downwards with the *Balls*, the *Form* is sufficiently *Beaten* in a train of Work, when the *Face* of the *Letter* *Takes* well.

But if he *Beats* the first Sheet of a fresh *Form*, or after a *Form* is *Washed*, or he makes a *Proof*, he *Goes* three four or five times *Upwards* and *Downwards*: Least the *Face* of the *Letter* should happen to be Wet  
or

or moist, and consequently un-apt to take *Inck*, without reiterated *Beatings*.

### ¶ 15. Of Pulling.

We will suppose now two *Press-men* going in the Morning to their train of Work: The one they distinguish by the name of *First*, the other his *Second*, these call one another *Companions*: The *First* is he that has wrought longest at that *Press*, except an Apprentice, for he must allow any Journey-man though new-come that title: Generally the Master Printer reposes the greatest trust upon his care and curiosity for good Work; although both are equally liable to perform it.

All the privilege that the *First* has above the *Second* is, that the *First* takes his choice to *Pull* or *Beat* the agreed stint first: And that the *Second* *Knocks up the Balls*, *Washes the Forms*, *Teizes Wooll*, and does the other more servile Work, while the *First* is employed about making *Register*, ordering the *Tympan*, *Frisket*, and *Points*, &c. or otherwise *Making Ready the Form*, &c.

The *First* now takes his spell at *Pulling*: For the *First* and *Second* take their spell of *Pulling* and *Beating* an agreed number of *Tokens*: Sometimes they agree to change every three *Tokens*, which is three Hours work, and sometimes every six *Tokens*; that they may both *Pull* and *Beat* a like number of *Tokens* in one day.

Under the general notion of *Pulling* and *Beating* is comprised all the operations that is in a train of work

performed by the *Puller* and the *Beater* : For though the *Puller Lays on Sheets*, Lays down the *Frisket*, Lays down the *Tympans* and *Frisket*, *Runs in the Carriage*, *Runs out the Carriage*, takes up the *Tympans*, Takes up the *Frisket*, *Picks the Form*, Takes off the Sheet, and Lays it on the *Heap*, yet all theſe Operations are in the general mingled and loſt in the name of *Pulling*. And as in *Pulling*, ſo in *Beating* ; for though the *Beater Rubs out his Inck*, *Slices it up*, *Deſtribute the Balls*, peruſes the *Heap*, &c. yet all theſe Operations are loſt in the general name of *Beating*. Thus they ſay the *First* or the *Second* is *Pulling* ; or, the *First* or the *Second* is *Beating* ; though they are performing the different Operations aforeſaid : unleſs upon particular occaſions the reſpective Operations are particularly nam'd.

As there are many Operations conjunct to *Pulling*, and *Beating*, ſo the *Preſs-man* performs them with various Set and Formal Poſtures and Geſtures of the Body. For,

To take a Sheet off the *Heap*, He places his Body almoſt ſtraight before the hither ſide of the *Tympan* : I ſay almoſt ſtraight, Becauſe it is more ſtraight before the ſide of the *Tympan* than it is before the angle made by the *Paper-bench* and the ſide of the *Tympan*. But he nimbly twiſts the upper part of his Body a little backwards towards the *Heap*, the better to ſee he takes but one Sheet off, which he looſens from the reſt of the *Heap* (as I have ſhewed before) by drawing the back-ſide of the Nail of his right Thumb on his Right Hand nimbly over almoſt the whole length of the *Heap*, and receiving the hither end of the Sheet with

with the inside of his Left Hand fingers and Thumb catches with his Right Hand about two inches within the farther edge of the Sheet near the upper corner, and about the length of his Thumb below the hither edge of the Sheet, and brings it nimbly to the *Tympan*: And at the same time twists his Body again straight before the *Tympan*, only a very little moving his right Foot from its first Station a little forwards under the *Carriage Plank*: And as the Sheet is coming to the *Tympan* (we suppose now he Works upon *White Paper*) he nimbly disposes the fingers of his Right Hand under the farther edge of the Sheet near the upper corner; and having the Sheet thus in both his Hands, lays the farther side and two extream corners of the Sheet down even upon the farther side and extream farther corners of the *Tympan-sheet*, but he is careful the upper corner of the Sheet be first laid even, upon the upper corner of the *Tympan-sheet*; that he may the sooner disengage his Right Hand: And if by the nimble casting his eye, he perceive the sides of the Sheet lye un-even upon the *Tympan-sheet*, he with his Left Hand at the bottom corner of the Sheet, either draws it backwards, or pulls it forwards, as the Sheet may lye higher or lower on the hither corners of the *Tympan-sheet*, while his Right Hand being disengaged, as aforesaid, is removed to the backside the *Ear* of the *Frisket*, and with it gives it a light touch to double it down upon the *Tympan*. And by this time his Left Hand is also disengaged, and slipt to the hither under corner of the *Frisket*, to receive it, that it fall neither too hard or too quick down upon the *Tympan*: For hard



falling may shake the loose Sheet on the *Tympan* out of its place; and so may the quick pressure of the Air between the *Tympan* and *Frisket*, after the Sheet is well laid: and while his Left Hand receives the *Frisket* his right is disengaged from the *Ear* of the *Frisket*, and removed to the middle of the back-side the *Tympan*; which he grasps between the Balls of his Fingers and Thumb, to lift it off the *Gallows*, and double it and the *Frisket* together on the *Form*. And while the *Tympan* is coming, he slips his Left Hand Fingers from under the *Frisket* to the hither outer corner of it, as well to keep the Sheet close to the *Tympan* in its position, as to avoid the jobbing of the lower side of the *Frisket* against any small square shoulder, either of the *Furniture*, *Quoins*, *Chase*, or the corners that may stand higher than their common Plain.

Then nimbly slipping his Left Hand, he with it grasps the *Rounce*, and with a moderate strength, nimbly gives its *Winch* about one Turn round; I say about, because the first *Pull* will generally fall out to be made about the middle of the *Carriage*; as was shewed in-§ II. ¶ 16. ) but perhaps not just in the middle: yet to regulate his *Runing in*, he made a mark before on the farther Rail of the *Tympan*, (as I shewed in ¶ 3. of this §) to which mark he *Runs* the *Carriage in*, till he bring the mark in a Range with the fore-edge of the *Plattin*; and as it is coming, skips his Hand to within an Inch or two of the end of the *Bar*, and then at once gently leans his Body back, that his Arm as he *Pulls* the *Bar* towards him may keep a straight posture; because in a *Pull* it has then  
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the greatest strength. And he also slips his right Foot upon the *Foot-step*, while his Left Hand holds fast by the *Rounce*; as well to rest on the *Foot-step* and *Roance*, as to enable his Body to make a stronger *Pull*; which will prove *Longer* or *Shorter*, according to the strength put to it, and also the *Hard* or *Soft Justifying* of the *Head*, (as was shewed in ¶ 5. of this §.)

Then disengaging his Right Hand again from the *Handle* of the *Bar*, he slips it to the *Bow* of the *Bar*, before the *Handle* fly quite back to the *Cheek* of the *Press*: For should the *Bar* by its forcible Spring knock hard against the *Cheek* of the *Press*, it might not only shake some of its Parts or circumstantial appurtenances out of order, but subject the whole Machine with oft reiteration to an unstable position. Besides, the farther the *Bar* flies back, the more he hinders quick riddance in recovering it again. But yet he must let the *Bar* fly so far back as that the *Tympan* may just rise clear off the *Plattin*; lest when he *Runs* in his *Second Pull*, the *Face* of the *Plattin* rub upon the *Tympan*, and shoves the *Sheet* upon the *Face* of the *Letter*, and sometimes *Slurs*, and sometimes *Doubles* it upon the *Face* of the *Letter*.

Having *Pull'd* the *First Pull*, and having the *Rounce* still in his Left Hand, He turns the *Rounce* about again, till the *Carriage Runs* in so far, as that the second mark on the Rail of the *Tympan* comes into a Range with the hither edge of the *Plattin*, as before the first mark did; and then *Pulls* his second *Pull*, as he did his first; and slips his Right Hand again off the *Handle* of the *Bar* to the *Bow*, (as before) and guides the *Bar* up to its *Catch* leisurely, that coming

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now near the *Cheek* it knock not againſt it: and juſt as he has *Pulled* his *Second Pull*, he gives a pretty quick and ſtrong preſſure upon the *Rounce*, to turn it back, and the *Carriage* out again: And ſo ſoon as he has given that one preſſure, (as aforeſaid) he diſengages his Left Hand from the *Rounce*, and claps the fingers of it under the middle of the *Tympan*, and on the *Ear* of the *Frisket*: and while this is doing, removes his Right Hand to the now upper, but immediately it will be the under-ſide of the *Tympan Rail*, within four or five Inches of the upper end of it, to receive the *Tympan*, as it is lifted up off the *Form* by his Left Hand. And having thus received it, lets it deſcend gently down on the *Gallows*. And as it is deſcending, ſlips his Left Hand fingers under the hither lower corner of the *Frisket*, and gives the *Frisket* a toſs up; while by this time his Right Hand being diſengaged from the *Tympan*, is ready to catch the *Frisket* by the *Ear*, and convey it quick and gently to its *Stay*: And while the *Frisket* is going up; he ſlips the end of the middle finger of his Left Hand, or ſometimes the ends of his two middle fingers with their Balls upwards, under the hither lower corner of the *Pulled off Sheet*, and at the inſtant he has got them under, he nimbly bows his Joynts upwards, to throw up the corner of the Sheet, to make it mount a little, for him to gather about two Inches hold of it between the Balls of his Thumb and fore-finger. And heaving the whole Sheet by this corner a little upwards, He at the ſame time liſts it off the *Points*, and draws it ſomewhat towards him; and as it comes, catches it near the upper corner of the ſame ſide of the Sheet,

Sheet, between the foremost Joynts of his fore-fingers and Ball of the Thumb of his Right Hand, and nimbly twisting about his Body towards the *Paper-bench* carries the Sheet over the *Heap* of *White-paper* to a *Paper-board*, which before he placed beyond that *Heap* on his Right Hand, (as aforesaid in ¶ 14.) and lays it down upon a Waste-sheet laid for that purpose on that *Paper-board*; but while it is coming over the *White-paper Heap*, though he have the Sheet between both his fore-fingers and Thumbs, yet he holds the Sheet so loosely that it may move between them as on two Centers, as his Body twists about (as aforesaid) from the side of the *Tympan* towards the side of the *Paper-bench*.

Thus you see both the *Press-mans* Hands at the same time alternatively engaged in different Operations: For while his Right Hand is employed in one Action his left is busie about another, and these exercises so suddenly varied, that they seem to slide into one another one Posture; beginning when the former is but half performed.

Having thus *Pulled* one Sheet, and laid it down: He turns his Body towards the *Tympan* again, and as he is turning gives the next Sheet on the *White-paper Heap* a Touch with the backside of the Nail of his Right Thumb, as before, to draw it a little over the hither edge of the *Heap*, and lays it on the *Tympan*, &c. as he did the first; and so successively every Sheet till the whole *Heap* of *White-paper* be *Wrought off*.

As he comes to a *Token-sheet*, he un-doubles that, and smooths out the Crease with the back-side of

the Nails of his Right Hand, that the *Face* of the *Letter* may Print upon smooth Paper. And being Printed off, he folds it again, as before, for a *Token-sheet* when he works the *Reiteration*.

Having *Wrought off* the *White-paper*, he turns the *Heap* thus:

He takes the *Paper-board* that his *White-paper* lay on, and sets it down on the ground: Then removes the *Heap* to his Left Hand; then takes up the *Paper-board*, and lays it on his Right Hand: And if it be *Twelves*, or any *Form Imposed* like *Twelves*, as *Twenty fours*, &c. he turns it from one long side of the Paper to the other, that is, the long side of the Paper that stands on his Right Hand when the Printed side lies upwards, he turns over to his Left Hand, and lays the un-printed side upwards. In performing this, he grasps off of the *Wrought off Heap* so much at once between both his Hands as he can well govern, without disordering the eveness of the sides of the *Heap*, viz. a *Token*, or more, and lays that upon the *Paper-board*; then takes another grasp in like manner, and lays that on the first grasp, and so successively, till he have turned the whole *Heap*, grasp by grasp. Then removes the *Heap* near the *Tympan*, and lays the other *Paper-board* beyond it, as the first *Paper-board* stood before; always remembering to lay a Waste-sheet first on the *Paper-board*.

Having now turned the *Heap*, and made *Register* on the *Reiteration Form* (as was shewed in ¶ 7. of this §) he Works off the *Reiteration*: But he somewhat varies his posture in the *Laying on his Sheets*: For as before, when he wrought *White Paper*, he catcht



catcht the Sheet by the upper farther corner with his Right Hand, he now having heaved up the Sheet (as aforesaid) catches it as near the farther side of the farther *Point-hole* as he can, with the Ball of his Right Hand Thumb above the Sheet, and the Ball of his fore-finger under the Sheet, the readier to lay the *Point-hole* over its respective *Point* : which having done, he slips his Body a little backwards, and both his Hands with it, his Right Hand towards the hither *Point-hole*, with the back-sides of the Nails of his fingers to draw or stroak it over the *Point* : and the fingers of his Left Hand, as they come from the farther corner, nimbly slipping along the bottom edge of the Sheet, till they come to the hither corner; and then with his fore-finger and Thumb, layes hold of it, to help guide the *Point-hole* on that *Point* also : Then Pulls that Sheet, as before, as he did the *White Paper*, and so successively all the rest of the *Reteration*. Only, the *Token-sheets*, as he meets with them, he Folds not down again, as he did the *White Paper*.

If a *Press-man* have no *Companion*, but works alone; he has a little oblong Square *Form* or Bench made to stand so high as the *Face* of the *Letter* upon the *Press-stone*, and so long as to contain the *Balls* when set upon the *Ball-leathers*.

This *Form* or Bench some Work-men will place on the hither side the hither *Cheek*, within about half an Inch of the fore-side of the *Cheek* : And other Work-men will place it on the farther side of the *Carriage*; each sort of Work-men supposing that in the place he sets it, the *Balls* stand most commodious for

his quick taking up and setting down : I shall not plead the convenience of either, but in short speak to the inconveniences of both.

The inconvenience of placing it on the hither side the hither *Cheek*, is, that the *Press-man* must twist his Body somewhat about to take up the *Balls*. And the inconvenience of placing it on the further side the *Carriage*, is, that the *Press-man* must thrust his Body over the *Form* to take up the *Balls*: both ways strain the Body, and hinder riddance.

Those that place it on the hither side the *Cheek*, begin and end their *Beating* as has already been shewed, viz. on the hither side the *Form* : But those that place it on the farther side the *Carriage*, begin and end their *Beating* on the Rows on the farther side the *Form*.

One *Press-man* in his train of Work will *Beat* so soon as he has laid the *Tympan* on the *Gallows* after *Pulling* : Another will not *Beat* till he has laid his Sheet on the *Tympan*, and doubled the *Frisket* down on it: both sorts fancying their own way most quick and commodious : For these conveniences are the purposes they both drive at.

¶ 16. Of Printing Red, or other Colours with Black.

When *Red* and *Black* are to be Printed upon the same Sheet, the *Press-man* first *Makes Register*, as was shewed ¶ 7. and *Makes Ready* his *Form* as was shewed ¶ 14. of this §. Then having a new *Frisket Drawn*, as was shewed ¶ 8. He Prints upon his new *Frisket* with *Black*. And having before a *Proof-sheet* Printed

Printed *Black*, with the Words to be Printed *Red* under-lined on that *Proof-sheet*; He takes off his *Frisket*, and lays it flat on a *Paper-board*, and with a sharp-pointed Pen-knife neatly cuts out those words on the *Frisket*, and about half a *Scaboard Margin* round about the words, that he finds under-lined on the *Proof-sheet*: Then sets the *Frisket* by till he has wrought off his *Heap* with *Black*, and puts his common *Frisket* on the *Joynts* of the *Tympan* again.

While the *Press-man* is *Cutting* the *Frisket*, the *Compositer* takes those *Words* out of the *Form* that are *Under-lin'd* on the *Proof-sheet*, and in their place puts *Quadrats*, m-*Quadrats*, *Spaces*, &c. to *Justifie* the *Lines* up again.

Then *Locking up* the *Form*, the *Press-man* Works off the *Heap Black*, as was shewed in the last ¶.

Having wrought off his *Heap Black*, he takes off the common *Frisket*, and puts on his new cut *Frisket*: Then taking a piece of thick *Scaboard* he cuts it into so many small slips as there are *Whites* in the *Form* to be Printed with *Red*; These small slips he cuts exactly to the length of the *Quadrats*, &c. the *Compositer* put in, and to the breadth of the *Body*; but rather a small matter less than bigger, lest they bind at the bottom of the *Shank* of the *Letter*: for when the *Compositer* takes out the *Quadrats*, &c. he put in before the *Form* was *Wrought off* *Black*, these slips of *Scaboards* the *Press-man* pricks on the *Point* of a *Bodkin* and puts them into their respective holes: And being loosen'd off the *Point* of the *Bodkin* with the blunt *Point* of another *Bodkin*, are laid down flat on the *Press-stone*; These slips are called *Underlays*, and

are described in ¶ 14. of this §. Upon these *Underlays* the *Compositer* puts in again the *Words* or *Letters* he took out before the *Form* was *Wrought off Black* : So that these *Words* now stand higher than the other *Matter* of the *Form*, and therefore will Print when the other *Matter* will not. But yet for the more assurance that the other *Matter* Print not, the *New-cut Frisket* was prepar'd, which hinders any thing to Print but what Prints through the Holes cut in it ; which Holes these *Underlaid Words* fall exactly through.

Having mingled the Red, or any other intended Colour with *Varnish*, as shall be shew'd in the next ¶, he *Beats* the *Form* as with *Black* ; and *Pulls* it very lightly, lest these *Underlaid Words* standing higher than the rest of the *Matter*, Print too *Hard*.

¶ 17. Of mixing and Grinding Colours with Varnish.

*Varnish* is the common *Menstruum* for all Colours that are to be used in Printing.

*Red* is the chief Colour that is used with *Black* in Book-Printing : of *Reds* there are two sorts in general use, viz. *Vermillion* and *Red-Lead* ; *Vermillion* is the deepest and purest Red, and always used to Books of Price. *Red-Lead* is much more faint and foul, and though more used than *Vermillion*, yet used only to Books of Vulgar Sale and Low price, as Almanacks, &c.

Yet may other Colours also be used to Print withal ; yea, any Colours that are used in Oyl-Painting, as *Lake* and *Ruffet*, which are *Reds* deeper than *Ver-*

*Vermillion* ; *Viriditur Indico* and *Bice* for *Blews* ; *Orpment*, *Pinck*, *Yellow Oaker*, for *Yellow* : *Viridigrease*, and *Green Viriditur*, for *Greens* : or what other Colours may be fancied.

But all Colours for Printing must be Ground with *Soft Varnish* ; especially those Colours that are of themselves Dryers ; as *Red-Lead*, *Vermillion*, *Orpment*, *Verdigrease* ; For should they be Ground with *Hard Varnish* the Colour'd *Inck* would dry and harden so quick and fast upon the *Form*, that it would soon be choaked up, and consequently want *Washing* e're the *Form* be *Wrought off* ; which would be very troublesome to the *Press-man*, because he must expect to have all his *Underlays* to new fit to their places : And besides, it will so Dry and Harden upon the *Balls*, that the Grain of the *Leathers* would quickly tear off, and fill the *Form* full of *Picks*.

The fittest Colours therefore for Printing, are such as are of the lightest Body and Brightest Colour.

They are to be Ground with a Mullar on a smooth Marble Stone, so long that the Colour becomes impalpable, and is thoroughly mingled with the *Varnish*.

¶ 18. *Of Printing with Gold and Silver.*

This Operation is seldom used but for Printing Names ; and therefore rarely drest in a *Form* to the *Press* ; but is usually Printed in the *Stick* : And then the *Compositer* *Justifies* his *Stick* very *Hard*, as well that



that the *Letters* fall not out when the *Back* of the *Stick* is turned upwards, as that the strength of the *Hard Varnish* the *Face* of the *Letter* is *Beat* with, pulls not the *Letter* out of the *Stick*.

Therefore the *Press-man* makes two little *Balls*, by tying about an Handful of Wooll in new clean Leather, and dabs one of his *Balls* upon the Hardest *Varnish* he has, and with the other distributes his *Varnish* to a convenient Fatness, as he did his *Balls* in ¶ 12. With one of these *Balls* he *Beats* the *Name*; and having his Paper *Wet*, he lays a single *Blanket* on the *Correcting-stone*, and his Paper on the *Blanket*; and with a *Riglet* fitted to the *Stick*, he presses the *Letter* to keep it straight in *Line*: Then places the *Face* of the *Letter* exactly flat down upon the Paper, and with the force of both his Hands presses the *Letter* hard and even down upon the Paper, to receive an Impression: But he takes care not to wriggle the *Letter* in the *Stick* backwards or forwards, lest either the *Beard* Print, or the sides of the *Letter* be more or less besmeared with the *Varnish*: Because the Gold or Silver will stick to the least Sully that the *Varnish* may chance to make.

Then cutting his Gold or Silver to a size full big enough to cover the Printed *Name* or *Matter*, he lays his Gold or Silver on what was Printed, and with a little White Cotton gently presses the Gold or Silver upon the Printed *Matter*, and lets the Paper lye by a while; as well that it may dry, as the *Varnish* Harden, (which will quickly be) he with his Handkerchief gently wipes over the Printed *Matter*. So shall all the Gold or Silver that was toucht

tought by the *Varnish*, stick to the *Varnish* on the Paper, and the other will wipe away.

If he lists to Polish it, he uses a Tooth or the Ivory Handle of a Knife.

¶ 19. *Rules observed; and Remedies to the Inconveniences the Press-man may meet with in a Train of Work.*

1. The *Press-man* is to make a *Proof* so oft as occasion requires: If he takes off his *Form* to make a *Proof*, he *Un-locks* and lays the *Quoins*, as shall be shewed when I come to *Washing* of the *Form*: but many *Printing-houses* have an empty *Press* stands by to make *Proves* on.

The *Compositer* having brought the *Form* to the *Press*, lays it down on the *Press-stone*, and the *Press-man* places it even under the *Plattin*, that the *Plattin* Bear not harder on the hither or farther side of the *Form*: Then he *Pulls* the *Cards* upon the *Form*, to press it into a flat position: Then *Beats* the *Form* four or five times over, that he may be sure it *Take*: Then he lays the *Proof-sheet* on the *Form*, so as by his Judgement it shall have an equal *Margin* on all its opposite sides, and a double *Blanket* on the *Proof-sheet*; and *Running* in the *Carriage*, *Pulls* the *Proof-sheet*: Having *Pull'd* it, he *Runs-out* the *Carriage* again, and takes the *Proof-sheet* off the *Form*. Then with the *Ly-brush* dipt in *Ly*, he *Rubs* over the *Face* of the *Letter* three or four times, to Wash off what *Inck* may remain on it, and carries the *Form* again

again to the *Correcting-stone* and lays it down: And the *Proof* he carries to the *Compositers Case*.

2. If the *Form* he Works on be *Small-letter*, or *Old Letter*, he uses *Strong Inck*; and *Beats Lean*: For *Weak Inck* and *Fat Beating*, will quickly Choak up the *Face* of the *Letter*. But to fetch off *Hard Inck* thin *Beat* on the *Face* of the *Letter*, he *Pulls Hard*. But if the *Form* be great *Letter* or *Black English Letter*, it will allow *Fatter Beating*.

3. He keeps a constant and methodical posture and gesture in every action of *Pulling* and *Beating*, which in a train of Work becomes habitual to him, and eases his Body, by not running into unnecessary diversions of Postures or Gestures in his Labour, and it eases his mind from much of its care, for the same causes have constantly the same effects. And a *Pull* of the same strength upon the same *Form*, with the same *Beating*, and with the same *Blankets*, &c. will give the same Colour and Impression.

4. That every two Sheets, if the *Form* be small *Letter* (rarely three, unless *Great Letter*) he *Takes Inck*; and so soon as he comes off the *Form*, viz. has *Beat* it, he falls to *Distributing* his *Balls*. And that Sheet which he *Takes* not *Inck* he steps to the *Heap* to overlook the Colour, viz. whether he has *Taken* too much or too little *Inck*; and to see if no accidents have befallen the *Form*, viz. that no *Letters*, *Quadrats* or *Furniture*, &c. Rise, that no *Letters* are *Batter'd*; That *Bearers* fail not, viz. grow so thin with long *Pulling* on, as not to perform the office of *Bearers*; that the *Register* keep good; that no *Pick* be got into the *Form*, or any other accident that may deface

face the beauty of the Work, but all this while still keeps his *Balls Distributing*.

If he have taken too much *Inck*, which sometimes may happen (but seldom for want of carelessness) he will not *Take Inck* again, till he have wrought his *Balls* to a good and moderate Colour. But if the Sheet already *Pull'd* be so *Black* that it may not tolerably pass, he Doubles or Folds it in the middle and lays it cross the *Heap*, that the *Gatherer* may take or leave it, in case the *Heap* falls Short. If he foresee the next Sheet will also be too *Black*, he takes a Dry Sheet of Waste Paper between his *Balls* and *Distributes* upon that Dry Sheet, that it may take off the *Inck*.

If in doing this, the strength of the *Inck* have *Pull'd* the *Paper* to pieces, so that small rowl'd-up bits may stick upon the *Ball-leathers*, if they be but a few he picks them off with his Fore-finger and Thumb, but if there be many he makes his *Balls* clean by *Scraping* them (as I shewed in ¶ 10. of this §) for else these small rowl'd-up bits of Paper will be apt to fill the *Form* full of *Picks*.

If *Letters*, *Quadrats* or *Furniture Rise*, he puts them down, the *Letters* and *Quadrats* with his *Bodkin*, and the *Furniture* with his *Hammer*, and *Locks* the *Quarter* they are in, a little Harder.

If any *Letters* are *Batter'd*, he *Unlocks* the *Quarter* they are in, and desires the *Compositer* to put in others in their room.

If *Bearers Fail*, that is, Squeeze thinner with long *Pulling* on, he takes those *Bearers* off, if they are on the *Frisket*, and puts on thicker : But if the *Furniture*,

ture, were *Under-laid* (as I shewed in ¶ 7. of this §) he *Unlocks* the *Quarter* they are in, and *Under-lays* them according to his Judgement.

If *Register* be *Out*, which sometimes happens by the starting of the *Quoins*, he mends it, as I shewed in ¶ 7. of this §.

If a few *Picks* are got into the *Form*, that is, little bits of Paper, Skin or Film of *Inck*, Grease or other filth which may stick to the *Face*, or get into the hollows of the *Letter*, he with the point of a Needle picks them out: But if many be gotten in, he takes off the *Form* and Washes it, as shall hereafter be shewed.

And though he every other Sheet overlook the *Heap* (as was said before) yet his *Companion* that *Pulls*, by an habitual use casts his eye upon every single Sheet; Yet rarely hinders his riddance by it, for while he is taking the Sheet off the *Tympan*, he gives a quick spreading glance upon it, and lays it down, as was shewed ¶ 15. of this §, unless he perceive somewhat to mend: For then he lets it lye on the *Tympan* till he has mended what was amiss.

And that he may *Take Inck* more equally, to keep the *Balls* of an equal Fatness, he keeps the *Rubb'd out Inck* on the *Inck-block* of an equal Fatness; which to do, he with the under-edge of the bottom of the *Brayer*, draws often from the mass of *Inck* a small, (and as near as he can gues) an equal quantity of *Inck*, viz. about the quantity of a Pea, and with the *Brayer* Rubs and disperfes that *Inck* of an equal thickness, all over the hither corner of the *Inck-block*. While this is doing he holds the *Balls* upright on one  
another



another in his Left Hand, leaning the Handle of the uppermost *Ball-stock* against his Breast.

The equal and often *Taking* of *Inck* in a small quantity, and constant *Distributing* of the *Balls*, is the onliest means to keep the *Heap* throughout of an equal Colour, and to avoid *Beating* of *Fryers*.

5. If he meets with naughty Sheets in his Work; as torn, or stain'd, &c. he Prints them not, but throws them under the *Paper-bench*; and if any crease or wrinkles be in any Sheet, he laying the backs of his four Left Hand fingers upon a smooth place in the Sheet, rubs with the backs of the Nails of his Right Hand Fingers from-wards him upon the wrinkles, till he have smoothened them.

6. And though his constant care is to Lay every particular Sheet even upon the *Heap*, yet it often happens either through *White Pages* that may come in the *Form*, which because not Printed lye solid on one another, the unequal pressing of one side or end of the Paper, or the unequal Bearing of the *Plattin* on one side or end of the *Form*; I say it often happens by these accidents, that the *Heap*, as it grows higher is on one part of the Sheet raised above, and on another part sunk below an Horizontal level: It is raised higher on that side or end of the *Heap* most prest in the *Tympan*, and by consequence makes the Paper there more Huffle; Because deep pressure of the *Letter* into the Paper below the common level of the Sheet bears the Paper off from the *Heap*, on the underside the Sheet; and the greater the number of Sheets are thus Printed off and laid on the *Heap*, the more that side or end of the *Heap* shall Rise:

And by the Rule of Contraries, when *White Pages* come in the *Form*, the greater number of *Sheets* laid on the *Heap*, shall where those *White Pages* lye, make the *Heap* lower in that place, because they clap solider together, for want of Printing the Paper through the backside level of each *Sheet*: So that the small un-level lying of every *Sheet*, though un-perceptable, in a small number of *Sheets*, makes each *Sheet* incline to the lowest side of the *Heap*, and as the *Heap* accumulates heighth, throws the *Heap* more or less towards the dripping side, or end over the bottom of the *Heap*.

To remedy which, he claps the insides of both his *Hands* against both the ends of the *Heap*, but more forcibly against the Hanging over end towards the other end, till he has drove the *Heap* into an up-right position.

If either of the sides hang over, he with the inside of his *Left Hand* commonly against the farther side of the *Heap*, and the outside of his *Right Hand* fingers on the hither side the *Heap*, either draws the hanging over side towards him with his *Left Hand*, or thrusts it from him with his *Right Hand* fingers, as aforesaid, while his opposite *Hand* does the office of a stop, that it be not drawn too forward, or thrust too much backward. Then where the *Heap* rises above the *Level*, he with the inside flats of one or both of his *Hands* presses it down into an *Horizontal Plain*.

7. If it be a *Reteration* he Works, and a great Number is laid on, he uses a *Tympan-cloath* instead of a *Tympan-sheet*: This *Tympan-cloath* is a Fine even

even Linnen Cloath, about an Inch or two larger on every side than the Paper he Works on: He Wets this Cloath and wrings the Water out again, so that it remains only moist: Then lays his Cloath instead of his *Tympan-sheet*, and Pastes the corners of the under side of it to the *Tympan*, and Works upon it as on a *Tympan-sheet*.

One reason why he uses a Cloath to Work the *Reiteration* on rather than a Sheet of Paper, is, because a Sheet of Paper quickly wears out, which a Cloath will not do. Another reason is, that when the *Inck* that wrought off the *White Paper* Sets off upon the *Tympan Cloath*, it may in clean *Ly* be washt clean again: For a good *Press-man* will not Work on a foul *Tympan Cloath* or (if he use no Cloath) on a foul *Tympan-sheet*, because as the *Inck* of the *White-paper* aforesaid, set off on the *Tympan Cloath*, so the more the *Tympan Cloath* has gathered *Inck* from the *White-Paper*, the more it will Return or give back again, towards the besmearing of every Sheet that is Printed on it.

The reason why the *Press-man* does not use a Cloath to Work the *White Paper* with, is, because in Working the *White-Paper*, the use of the *Tympan-Sheet* is principally to lay all the Sheets of the *Heap* even by, as being of the exact size with all the rest of the *Heap*, which a *Tympan-Cloath* is not, nor could it, without great trouble, be reduced to that size by the *Press-man*, or if reduced to that size, without much difficulty be laid even or square on the *Tympan*: Because the *Cloath* when *Wet*, will be hard to be kept straight and square, but every side will

will naturally run into irregularities, which a Sheet of *White Paper* will not do.

8. Sometimes, through the loose *Hanging* of the *Plattin* on its *Cords*, or through the much wearing of the *Hose*, or the *Garter*, or the *Worms* in the *Nut* and *Spindle*, or the irregular wearing of the *Toe* of the *Spindle* in its *Nut*, or too much play of the *Tennants* of the *Head* in their *Mortesses*, or the irregular dryness of the *Tympan*, or through irregular *Running* in of the *Carriage*, It will happen that the *Letter* will *Double* upon the *Sheets*, that is, *Print double*.

If the loose *Hanging* of the *Plattin* be the cause, it is easily mended by turning about the *Female Screws* fitted to the tops of the *Hose*, as was shewed ¶ 4. of this §.

If the *Hose* be worn, or the square holes the *Hose* Works in, it may for the present be botcht up by putting *Scaboards* between the *Hose* and the square holes of the *Till*; but to mend it perfectly either another *Till* must be made, or a new *Hose*, or both.

If the *Garter* be worn too wide; the *Smith* must either mend the *Old*, or make a new one.

If the *Worms* of the *Nut* or *Spindle* be worn, the *Spindle* must be examin'd by the *Smith*, and made true, and have a new *Nut* Cast on it.

If the *Toe* of the *Spindle* and its *Nut*, or either of them be worn irregularly, it is *Smiths Work* to mend.

If the *Tennants* in the *Head* have too much *Play* in their *Mortesses*; which though it seldom happens, yet if the *Head* were not made of well seasoned *Stuff*, the *Tennants* may be subject to shrink, and so have too

too much play. There is no substantial remedying this fault, but by making a new *Head*.

If an unproper temperature of the *Tympan* be the cause; that is, when it is dry in one place and moist in another, the dried place may by its spring force the Paper against the *Face* of the *Letter*, and in part Print it before it come to feel the force of the *Plattin*; (but this is rather slurring than *Doubling*) and when the force of the *Plattin* does come, the spring in the dried part will again remove the Paper, and the force of the *Plattin* gives its full Impression where the Paper is thus removed, but when it is real *Doubling*, it happens generally on the whole Sheet.

This *Doubling* or *Slurring* is mended, by reducing the dryest part of the *Tympan* to an equal moist temperature with the moistest.

*Doubling* often happens in the middle of the *Form*, and the reason is, because the foreside of the *Plattin* Prints beyond the middle of the *Form* at the first *Pull*, and the hindside of the *Plattin* by the *Second Pull* reprints part of the *First Pull*: So that a Spring in the *Tympan* removes the Paper in this interval of Time.

This fault is mended by exact observing the *Running* in of the *Carriage*.

*Doubling* may also happen by the too loose and flapping straining of the *Tympan*, when it was first *Drawn*.

This cannot be mended without taking the *Tympan* off, and *Drawing* on a new one.

A *Press-man* having *Pull'd* a Sheet, may by some accident (either of Object or Discourse) let it ly on the



*Form* after he has *Run-out* the *Carriage*, and afterwards forget it was *Pull'd*, yet may perhaps lift the *Tympan* a little off the *Form*, which lifting off (if the *Foynts* are not very good) will remove the *Sheet*, if then he *Pull* it again, it will *Double*.

This fault because it is but an accident I shall pass by, and only say,

If the *Foynts* are so faulty (as sometimes Old *Foynts* are) that the *Press-man* cannot keep *Register* with them, the *Smith* must make new or mend the Old.

9. When the *Press-man* leaves Work at Noon, he draws half the Nails out of the Balls, and takes the Wooll out : Then doubles the loose half of the *Leather* over the remaining Nail'd-on half, with the *Incky sides* of each half next each other, and Rows up the *Leathers* close, and laies them in a Bowl or Pan of Water to Soak till he has Din'd.

He also covers the *Form* with the *Tympan*, to keep it from dust or filth that may fall on it : And takes out the *Blankets* and lays them on the *Heaps* : And with a *Sponge* Wet in Water besprinkles the backside of the *Tympan*, to Soak it whiles he is at Dinner.

Coming again to his Work afternoon, he takes the *Handles* of the *Ball-stocks* between his Thighs, (being seated as before, when he knockt up the *Balls*, ¶ 10.) to hold them fast, and he takes the turn'd down backside of the *Ball-leathers* in both his hands, (for the other side being all over Black, would black his Hands) and rubs them between his Fingers very well, to supple them. Then squeezes and Wrings the Water well out again ; and Teizes his Wooll, by opening

opening all the hard and almost matted knots he finds in it : but he does not pull the Wooll or hardned knots in it assunder from the whole mass of Wooll : But endeavours to keep the Wooll of each *Ball* intirely connected in the same mass, and only opened, to Loosen and Soften it : For pulling the knots to pieces, would tear the Wooll, and soon make it unfit for use. Having *Teazed* the *Wooll* he *Knocks up* his *Balls* again, as I shewed in ¶ 10.

Then he goes to the *Tympan*, and squeezing his *Sponge* as dry as he can, he rubs it over the backside of the *Tympan*, to Suck up the Water, that may lye on it.

Then taking the *Blankets*, he rubs them between both his Hands to soften them ; for we must suppose that the Mornings *Pulling* on them has compacted and hardned them : being well Rub'd, he lays them in the *Tympan* again, as was shewed before in ¶ 7. and falls again to his Afternoons train of Work.

Having wrought all day, though his *Form* be not *Wrought off*, it may yet be *Foul*, so that he must *Wash* it : Nay, in small *Letter* a good *Press-man* will *Wash* his *Form* twice a day : Wherefore he calls to the Boy to Heat the *Ly*, somewhat before he is ready for it, about a Heating time : And having a *Shooting-stick* lying by him on the *Till* or some other convenient place, drives every *Quoin* between the *Furniture* and the *Chase* fast up ; least they may have somewhat shrunk, or else started back : Then with a piece of Chalk he makes a score on the two farthermost *Corners* of the *Carriage* ; and through the *Quoins* droven against them, and upon the two *Corners* of the

*Carriage* of the *Tympan* and their *Quoins*, and lets the *Quoins* ly; but he *Unlocks* all the opposite *Quoins*, and takes them out of their places; laying those *Quoins* that he takes from between the fore-end of the *Carriage* and the *Chafe* on the hithermost upper long side of the *Plattin*, the hithermost *Quoin* on the hithermost side of the *Plattin*, and the farthestmost *Quoin* on the farthestmost side of the *Plattin*; with their small ends towards him, and fromwards him as they lay on the *Carriage*. The *Quoins* that he takes from the hither side of the *Carriage*, he lays on the hithermost Return side or end of the *Plattin*; that on his Left Hand on the *Carriage*, towards the farther Corner of the *Plattin*, and that *Quoin* on the Right Hand on the *Carriage*, towards the hither corner of the *Plattin*, with their small ends towards the Hand they lay on, on the *Carriage*.

Having taken out and placed these four *Quoins*, he tries if the *Form* will *Rise*, as was shewed § 22. ¶ 7. then takes up the *Form*, and carries it to the *Ly-Trough*, and lays it in it, even as the *Compositer* brought the *Form* to the *Press*, and laid it on the *Press-stone*. § 22. ¶ 7. and taking the *Ly Kettle*, or *Chafar*, in his Left Hand pours the *Ly* Scalding hot place by place over the whole *Form*: And then with the ends of the Hair of the *Ly Brush* rubs gently over the whole *Form*: And as he thus *Rubs* with his Right Hand Rocks the *Ly-Trough* a little on its Axis, that the Body of *Ly* may accompany the *Ly-Brush* in its progress from the hither to the farther side of the *Form*: And thus he *Washes* the *Form* still on, till he perceive the *Face* of the *Letter* purely clean. Then

Then he lets the *Ly* out again into the *Ly-Kettle* at the Hole and Pipe in the Left Hand hither corner of the *Ly-Trough*: and stopping the hole again, sets by the *Ly-Kettle*. Then with a Dish or two of fair Water he *Rinces off* the Laver of the *Ly* that may ly on the Face of the *Letter*, and rears up the *Form* and throws a Dishful or two of fair Water on the back-side of it, to *Rince* it also. Then takes the *Form* out of the *Ly-Trough*, and sets it by, shelving with its Face against the Wall, to Dry.

If the *Heap* be *Wrought off*, he lets the *Compositer* know it, to take Charge of it.

Having *Wrought off* his *Heap*, he takes it off the *Paper-bench*, and sets it by on the floor, covering it with a Waste-sheet: And gives notice to the Boy, or to the *Ware-house-keeper*, to fetch it away and Hang it up to Dry.

Then he draws the *Balls*, and takes the *Blankets* out of the *Tympan* (as at Noon:) And if he have Paper to *Wet*, *Wets* it as was shewed ¶ 9. of this §.

§ 25. *The Office of the Warehouse-keeper.*

¶ 1. Of Hanging up Paper.

THE *Warehouse-keeper* takes the *Heap* out of the *Press-room*, and carries it into the *Warehouse*, or other *Drying-place*, and setting it upon a Form or Bench of convenient heighth, with an end of the *Heap* from him, he takes the *Handle* of the *Peel* in his Left Hand, and lays the *Board* flat down upon the *Heap*, with the Left Hand side of the *Board* to-wards.

wards the Left Hand side of the *Heap*, and so as its upper edge may reach to almost three quarters of the length of the Sheet, and that the Right Hand end of the *Peel* may ly on the middle of the *Heap*: Then with his Right Hand he doubles over so much of the *Heap* as he thinks good, perhaps about a *Quire*, or half a *Quire*, or about seventeen Sheets, more or less, either as he can allow them time to *Dry*, or have room on his *Racks* to *Hang* them on. Having thus doubled his first *Doubling* on the *Heap*, he removes the Left Hand half of the *Peel* almost off the *Heap*, viz. to about two Inches within the Left Hand side of the *Heap*, and doubles, as before, a second *Doubling* to hang over the first *Doubling*, towards the Left Hand about two Inches, as aforesaid, on the *Peel*, and as near as he can guess, the same number of Sheets. And having these two *Doublings* on his *Peel*, he takes the *Peel* off the *Heap*, and holding the *Handle* a little aslope, that the *Shorter Folding-over* of the Sheets may open from the *Peel*, he lifts it up, and places it at one end of his first *Rack*, and lets it hang on it, by drawing the *Peel* from under the Paper. In like manner he Loads and unloads his *Peel* again successively, till he have *Hung up* the whole *Heap*. See Plate 31.

Note, that the sides of the Sheets do not hang against one another, but lap over one another, as you may see by Plate 31. Nor are they *Hung up* to *Hang* with their edges against the side of the former *Hanging-up*, but to lap over, so as every Right Hand *Doubling* may lap about two Inches over the Left Hand *Doubling*; that when the *Books* are taken down, the



the *Warehouse-keeper* clapping the flat side of his *Peel* against the Right Hand edge of the Paper, slides several *Doublings* over one another (perhaps three or four :) And putting the *Peel* under them, takes them off the *Racks*, and lays them on the *Heap* again, on a clean Waste Paper, and sets the *Heap* orderly by, till it comes to be *Gather'd*.

The *Warehouse-keeper* is also very careful to lay all the Sheets, so as the respective *Signatures* of every Sheet may ly exactly over the respective *Signature* of the first Sheet, lest when the *Books* come to be *Gathered*, some Sheets may be *Turned*, which will give him a great deal of trouble to *Turn* them right when he *Colations* the *Books*.

## ¶ 2. Of Laying the Heaps.

*Laying the Heaps* is to place them on Benches or Forms of a convenient Heighth, in an orderly *Signatural* Succession. By an orderly *Signatural* succession, I mean the first *Signature*, which most commonly is A (and therefore shall be so accepted) be placed on the Left Hand of the Bench, with either the Side or Foot of the *Page*, as the *Column* requires, that hath the single *Signature* A at the bottom of it upwards, and towards the hither side of the Bench. On the Right Hand side of the *Heap* A is B, and next it C, in like order DEF, &c.

## ¶ 3. Of

## ¶ 3. Of Gathering of Books.

*Gathering of Books* is to take one Sheet off every *Heap*, beginning at the last *Heap* first, viz. at the Left Hand end of the Range. The *Gatherer* takes it off with his Right Hand, and disposes the hither end of the Sheet into his Left Hand, clapping his Left Hand Thumb upon the middle of the Sheet, to hold it fast. Then he takes a second Sheet off the second *Heap* from the Left Hand, viz. towards the Right; and lays the second Sheet on the first, and so successively a third, a fourth, a fifth, &c. till he has *Gathered* the last Sheet on his Right Hand; still observing to lay the middle of each Sheet under his Thumb, and all the single *Signatures* on each Sheet orderly and successively on one another.

Thus he *Gathers* on, till one of all the *Heaps* Comes off; which when it does, he Doubles or Quires up all the other *Heaps*, and lays them by till he can *Bundle* and Tye them up; which when he has also done, he writes upon them *Imperfections* of (the *Title* of the *Book*) and Writes on it the *Signature* of the Sheet that is Wanting, and sets it by in a convenient place of the *Warehouse*, that he may have recourse to it on any occasion.

Though I shewed how he *Gathered* the *Books*, yet shewed not how he *Knocks them up* and *Folds* them: Wherefore,

Having thus *Gathered* one *Book*, he *Knocks it up*, that is, he carries it to a Table provided on purpose

pose near him; and taking the ends of the *Book* between the two Bows of the Thumb and Fore-finger of each Hand, he grasps the ends loosely between them, and placing the hither long side or edge of the *Book* on the plain of the Table, he lifts the whole *Book* a little above the plain of the Table, (about an Inch or two, more or less) and while the whole *Book* is held loosely by its ends, lets it fall gently down on the Table, that the edges of such Sheets as may stand out, or lower than the rest, may be drove even with the rest of the edges of the *Book*, and also that the edges of such Sheets as may lye above the edges of the *Book* may be joulted downwards, and lye even in the same Range with the rest of the edges.

And as he is *Knocking up* the lower edge of the *Book*, he at the same time evens the two ends of the *Book*, by thrusting the Bows of his Thumbs and Fingers against the ends of the *Book*, which being loosely grasp'd, and the Bows of his Thumbs and Fingers bearing pretty stiff towards each other, will drive in the ends of such Sheets as may stick out at either end; and so even the ends of the *Book* at the same time.

Having thus even'd all the edges, he lays the *Book* flat down on the Table, and holding one end of it stiff and tight in his Left Hand, he rubs the whole flat of his Right Hand hard upon the upper Sheet, to press it and all the other Sheets as close together as he can; then takes it up, and gives the edges another or two gentle *Knocks*, as before; and then *Folds up*, or *Doubles* the *Book*, according to its respective *Volume*.

A a a

If

If it be *Folio*, *Quarto*, *Octavo* or *Sixteens*, he *Folds* it in the *Short Cross*; but if it be *Twelves*, *Eighteens*, *Twenty-fours*, he *Folds* it in the *Long Cross*.

But most times before he *Folds* the *Books* he will *Colation* them: (as shall be shewed by and by:) therefore having *Gathered* the *Book*, he lays it by on a Sheet of Waste Paper, and *Gathers* a second *Book* as he did the first, and lays that flat open on the first, then *Gathers* a third, fourth, fifth *Book*, &c. as before, and lays them successively on each other, till he have raised an *Heap* of *Books* so high, that he grows cautious of laying more on, lest its height should exceed his management. Then *Gathers* on, and raises another *Heap* or *Heaps* till one of the *Signatures* comes off.

#### ¶ 4. Of Colationing Books.

The *Colationing* of *Books*, is,

First, To examine whether the whole number of Sheets that belong to a *Book* are *Gathered* in the *Book*.

Secondly, To examine that two Sheets of one sort are not *Gathered*.

Thirdly, To examine whether the proper *Signature* of every Sheet lye on its proper corner of the *Gathered Book*.

To do this, The *Colationer* provides himself with a *Bodkin*; which is nothing else than a pretty thick Sowing Needle, (most commonly broken-eyed,) having its thick end thrust fast into a round piece of Wood, about the thickness of a Tobacco-Pipe, and about three or four Inches long.

Now

Now having the *Heap* of *Gathered Books* before him, with the single *Signature A* lying upwards on his Right Hand, and his Left Arm cross the *Heap*, and his Hand near the *Signature* corner, with his *Bodkin* in his Right Hand, he pricks up the corner of the first Sheet *A*, and at the same moment he pricks it up, slips the Balls of his two Fore-fingers of his Left Hand, and secures it from falling back again on the *Gathered Heap* of *Books* between his Thumb and hinder Joynt of his Fore-finger, and immediately pricks into the Sheet *B*, casting his Eye upon the *Signature*, as well to see that it is *B*, as to see that it is singly *B*, and not *B 2*, *B 3*, &c. For if the single *Signature* lye not on the same corner of the *Heap*, the Sheet must be turned till it do. In like manner he picks up and receives *CD*, &c. still casting his Eye that it be the right *Letter*, and single *Signature*, as aforesaid.

If he finds two Sheets of the same *Signature*, he takes one out and lays it by, or else on the *Heap*, if they be not all *Gathered*.

If he finds one Sheet wanting, he fetches that Sheet from the *Heap*; or if he want it at the *Heap* the *Book* is laid by as *Unperfect* till he have *Colationed* the whole *Impression* of *Books*, to see if he can make it *Perfect* with some other *Book*, that may have two of the same Sheets *Gathered* in it.

Having examined that his *Book* is *Perfect*, he *Knocks* and *Folds it up*, as was shewed in the last ¶.

Having *Gathered*, *Colationed* and *Folded* these *Books*, he *Tells* them, to see how the *Impression Holds out*; and as he *Tells* them, he lays a set number of



*Books* (if the *Books* be *Thick*, five, if *Thinner*, Ten, if very *Thin*, twenty five or fifty) with the *Folded Side* or *Back* one way, and the same *Number* of *Books*, with the *Folded* or *Back-side* the other way, viz. the edges of the latter number of *Books* upon the *Backs* of the former *Number*: As well to distinguish and Count the *Number* of *Books* readily, as to keep the *Bundle* in a flat and Horizontal position. For if the *Backs* of the *Quired Books* in a *Bundle*, should lye all one way, the *Fold* of the *Back* being more or less hollow in the middle of each *Book*, will in a *Number* of *Books*, by springing upwards, mount the *Backs*; and consequently the edges of the *Books* in the *Bundle* will be depressed, so that in a great *Bundle* the *Books* will be subject to slide off one another.

These *Books* being thus Counted, he sets them by on Waste Paper in convenient Piles, viz. Piles of about three or four Reams high (according as the Paper may be thicker or thinner) he sets them by (I say) in Piles of equal Numbers, Range by Range, till the whole *Impression* is set by.

And before he Tyes them up, he puts them into the *Standing Press*, placing in it so many *Books* as the *Press* will hold, both in width and Height; observing to set in every *Pile* he puts Range by Range into the *Press*, an equal number of *Books*, that each *Pile* may equally feel the force of the Screw.

Then with a strong Iron Bar he turns about the *Spindle* as oft as he can, with his main Strength to Squeeze and *Press* the *Books* as close and tight as he can together: and so lets them stand in *Press* about  
a Day

a Day and a Night. Then takes them out, and in like manner puts in more *Books*, till the whole *Impression* is *Prest*. See Plate 32.

As he takes each number of *Books*, he Tyes them up with Packthred, lays a Waste Paper under and upon each *Bundle*; and if the *Master-Printer* Printed the *Impression* for Himself, he writes the *Title* of the *Book*, and number of the *Books* on the uppermost Waste Paper, and sets them by square and orderly on the Shelves in the *Warehouse*, to deliver them out according to the *Master-Printers* order. But if the *Impression* were Printed for an Author, or a Book-seller, he sends them to the Authors or Book-sellers, without writing on the uppermost Waste Paper.

¶ 5. Of Setting out Paper, and Culling the Cording Quires.

Each Ream of Paper contains twenty Quires: These twenty Quires are by the Paper-makers so disposed that the Back or Doubling of each Quire lyes upon the opening or edges of the next Quire: For reasons given in the last ¶.

Two of the twenty Quires in a Ream are called *Cording Quires*, viz. the two *Out-side Quires*; because the whole Ream is Corded or Tied up between them. They are also called *Cassie Quires*, because they serve for Cases to the Ream. These Quires are by the Paper-maker made up of torn, wrinckled, stained, and otherwise naughty Sheets; yet does not perhaps the whole Quire consist of such Sheets, but commonly:

A a a 3 some

some good Sheets are in *Culling* found among them, as shall be farther shewed by and by.

The *Warehouse-keeper* therefore when he *Sets out* Paper, lays by the uppermost *Cording Quire*, and then nimblely snatches with his Right Hand at the back of the next *Quire*, and if the back lye towards him, draws it into his Left Hand with the edges of the *Quire* towards his Fingers ; but if the back lye from him, nimblely turns it while it is coming to his Left Hand, and so again nimblely snatches at the back of the succeeding *Quires*, placing their backs all one way on the First *Quire* in his Left Hand, till he have Counted or taken off of the Ream a *Token*; which *Token*, if it be set out for *Half a Press*, viz. a *Single Press-man*, is generally but five *Quires*, and is indeed often called *Half a Token* : But if it be for an *Whole Press*, it contains Ten *Quires*. This *Token* he lays by near him, upon a Waste Sheet of Paper, and again applies himself to *Set out* the next *Token* in the same manner, but lays the next *Token* with the backs of the *Quires* over the edges of the former *Token*, and thus *Sets out* so many *Tokens* as his *Heap* requires, yet always considers how his Paper *Holds out*, whether five and twenties, or but four and twenties : If it *Holds out* five and twenties, he *Sets out* in every Fourth, Fifth, or Sixth *Token* Eleven *Quires*, to secure the *Impression* to *Hold out*. If but four and twenties, he *Sets out* Eleven *Quires*, in every second *Token*, and at last a *Quire* more to the whole *Heap* to make good the wanting Sheets of every *Quire*, and to make *Proves*, *Revises*, *Register-Sheets*, *Tympan-Sheets*, and to supply other accidents that may happen at the *Press*,  
either

either by naughty Sheets, or Faults committed in *Beating, Pulling, Bad Register, &c.* for all or any of these accidents that happens to a Sheet, the *Press-man* doubles it, and lays by in the *Heap* as Waste, as I shewed § 24. ¶ 18. (4) and still he remembers, as aforesaid to lay by the two *out-side Quires* of every Ream; and at last lays on the *Heap* another Waste Sheet of Paper, and so brings it to the *Press* to be *Wet*.

The *Culling the Cording Quires*, is, to examine every Sheet one by one. To do it, he lays the *Cording Quires*, or many *Cording Quires* open before him against the Light, and takes up every Sheet successively and observes the goodness of it: Such Sheets as he finds good, he lays on his Right Hand, and the Bad on his Left. If a Sheet have but a little corner torn off, *viz.* so much as he judges the *Book-binder* would take off with his *Plow*, to make the *Leaf* square with other *Leaves*, he accounts that a good Sheet: But if more be torn off, he lays it by for Bad; and so he does Wrinkled and stain'd Sheets.

Having thus *Cull'd* all the *Cording Quires*, he tells out the good Paper into *Quires*, allowing five and twenty to the *Quire*, if the *Quires* of the Ream hold out five and twenty; or else but into four and twenty. And the good Paper thus *Cull'd*, he tells into an *Heap* or *Heaps*, as far as it will go.

But yet the careful *Warehouse-keeper* will not give the *Press-man* this *Cull'd* Paper to Print at the beginning or end of a *Book*, but disposes that *Heap* or *Heaps* so as they may be used about the middle of the *Book*: For though we call'd it good Paper, yet it very rarely

ly happens to be fo beautiful as the *Inſide Quires*.

The Bad Paper he alſo *Tells out* into *Quires*, but allows no more than four and twenty Sheets to the *Quire*, becauſe it is commonly ſet by in the *Warehouſe* to be fold.

It is alſo the Office of the *Warehouſe-keeper* to keep a *Day Book*, and in it to ſet down what Books he Sells, and for how much, and to whom, and whom by order of the *Maſter-Printer* he Truſts with Books, and for how long Time ; that ſo the *Maſter-Printer* may as oft as he pleaſes have an account how the *Impreſſion*, or part of it, is diſpoſed of.

( *As an Appendix.* ) *Ancient Cuſtoms uſed in a Printing-houſe.*

EVERY *Printing-houſe* is by the Cuſtom of Time out of mind, called a *Chappel* ; and all the Workmen that belong to it are *Members of the Chappel* : and the Oldeſt Freeman is *Father of the Chappel*. I ſuppoſe the ſtile was originally conferred upon it by the courteſie of ſome great Churchman, or men, (doubtleſs when Chappels were in more veneration than of late years they have been here in *England*) who for the Books of Divinity that proceeded from a *Printing-houſe* , gave it the Reverend Title of *Chappel*.

There have been formerly Cuſtoms and By-Laws made and intended for the well and good Government of the *Chappel*, and for the more Civil and orderly deportment of all its Members while in the *Chappel* ; and the Penalty for the breach of any of theſe



these Laws and Customs is in Printers Language called a *Solace*.

And the Judges of these *Solaces*, and other Controversies relating to the *Chappel*, or any of its Members, was plurality of Votes in the *Chappel*. It being asserted as a Maxim, *That the Chappel cannot Err*. But when any Controversie is thus decided, it always ends in the Good of the *Chappel*.

1. Swearing in the *Chappel*, a *Solace*.
2. Fighting in the *Chappel*, a *Solace*.
3. Abusive Language, or giving the Ly in the *Chappel*, a *Solace*.
4. To be Drunk in the *Chappel*, a *Solace*.
5. For any of the Workmen to leave his Candle burning at Night, a *Solace*.
6. If the *Compositer* let fall his *Composing-stick*, and another take it up, a *Solace*.
7. Three Letters and a Space to lye under the *Compositers Case*, a *Solace*.
8. If a *Prefs-man* let fall his Ball or Balls, and another take it up, a *Solace*.
9. If a *Prefs-man* leave his Blankets in the *Tympan* at Noon or Night, a *Solace*.

These *Solaces* were to be bought off, for the good of the *Chappel*: Nor were the price of these *Solaces* alike: For some were 12 d. 6 d. 4 d. 2 d. 1 d. ob. according to the nature and quality of the *Solace*.

But if the Delinquent prov'd Obstinate or Refractory, and would not pay his *Solace* at the Price of the *Chappel*; they *Solac'd* him.

The manner of *Solacing*, thus.

The Workmen take him by force, and lay him on

B b b

his

his Belly athwart the *Correcting-stone*, and held him there while another of the Work-men, with a Paper-board, gave him 10 l. and a Purse, viz. Eleven blows on his Buttocks; which he laid on according to his own mercy. For Tradition tells us, that about 50 years ago one was *Solaced* with so much violence, that he presently Pissed Blood; and shortly after dyed of it.

These nine *Solaces* were all the *Solaces* usually and generally accepted: yet in some particular *Chappels* the *Work-men* did by consent make other *Solaces*, viz.

That it should be a *Solace* for any of the Work-men to mention Joyning their Penny or more apiece to send for Drink.

To mention spending *Chappel-money* till *Saturday Night*, or any other before agreed time.

To Play at *Quadrats*, or excite any of the *Chappel* to Play at *Quadrats*; either for Money or Drink.

This *Solace* is generally Purchas'd by the Master-Printer; as well because it hinders the Workmens work, as because it Batters and spoils the *Quadrats*: For the manner how they Play with them is Thus: They take five or seven more m *Quadrats* (generally of the *English Body*) and holding their Hand below the Surface of the *Correcting Stone*, shake them in their Hand, and tosse them up upon the *Stone*, and then count how many *Nicks* upwards each man throws in three times, or any other number of times agreed on: And he that throws most Wins the Bett of all the rest, and stands out free, till the rest have try'd who throws fewest *Nicks* upwards in so many throws; for all the rest are free: and he pays the Bett.

For

For any to *Take up a Sheet*, if he receiv'd *Copy-money*; Or if he receiv'd no *Copy-money*, and did *Take up a Sheet*, and carryed that Sheet or Sheets off the Printing-House till the whole Book was Printed off and Publisht.

Any of the Workmen may purchase a *Solace* for any trivial matter, if the rest of the *Chappel* consent to it. As if any of the Workmen Sing in the *Chappel*; he that is offended at it may, with the *Chappels* Consent purchase a penny or two penny *Solace* for any Workmans singing after the *Solace* is made; Or if a Workman or a Stranger salute a Woman in the *Chappel*, after the making of the *Solace*, it is a *Solace* of such a Value as is agreed on.

The price of all *Solaces* to be purchased is wholly Arbitrary in the *Chappel*. And a Penny *Solace* may perhaps cost the Purchaser Six Pence, Twelve Pence, or more for the *Good of the Chappel*.

Yet sometimes *Solaces* may cost double the Purchase or more. As if some *Compositer* have (to affront a *Press-man*) put a Wisp of Hay in the *Press-mans Ball-Racks*; If the *Press-man* cannot well brook this affront, he will lay six Pence down on the *Correcting Stone* to purchase a *Solace* of twelve Pence upon him that did it; and the *Chappel* cannot in Justice refuse to grant it: because it tends to the *Good of the Chappel*: And being granted, it becomes every Members duty to make what discovery he can: because it tends to the farther *Good of the Chappel*: And by this means it seldom happens but the Aggressor is found out.

Nor did *Solaces* reach only the *Members of the*  
B b b 2 *Chap-*

*Chappel*, but also Strangers that came into the *Chappel*, and offered affronts or indignities to the *Chappel*, or any of its Members; the *Chappel* would determine it a *Solace*. Example,

It was a *Solace* for any to come to the *Kings Printing-house* and ask for a Ballad.

For any to come and enquire of a *Compositer*, whether he had News of such a Galley at Sea.

For any to bring a Wisp of Hay, directed to any of the *Pres-men*.

And such Strangers were commonly sent by some who knew the *Customs of the Chappel*, and had a mind to put a Trick upon the Stranger.

Other Customs were used in the *Chappel*, which were not *Solaces*, viz. Every new Workman to pay half a Crown; which is called his *Benvenue*: This *Benvenue* being so constant a Custome is still lookt upon by all Workmen as the undoubted Right of the *Chappel*, and therefore never disputed; yet he who has not paid his *Benvenue* is no Member of the *Chappel*, nor enjoys any benefit of *Chappel-Money*.

If a Journey-man Wrought formerly upon the same Printing House, and comes again to Work on it, pays but half a *Benvenue*.

If a Journey-man *Smout* more or less on another Printing House, and any of the *Chappel* can prove it, he pays half a *Benvenue*.

I told you before that abusive Language or giving the Lye was a *Solace*: But if in discourse, when any of the Workmen affirm any thing that is not believed, the *Compositer* knocks with the back corner of his *Composing-stick* against the lower Ledge of his *Lower Case*,

*Case*, and the *Press-man* knocks the *Handles* of his *Ball-stocks* together : Thereby signifying the discredit they give to his *Story*.

It is now customary that *Journey-men* are paid for all Church Holy days that fall not on a *Sunday*, Whether they *Work* or no : And they are by *Contract* with the *Master Printer* paid proportionably for what they undertake to *Earn* every *Working* day, be it half a *Crown*, two *Shillings*, three *Shillings*, four *Shillings*, &c.

It is also customary for all the *Journey-men* to make every *Year* new *Paper Windows*, whether the old will serve again or no ; Because that day they make them, the *Master Printer* gives them a *Way-goose* ; that is, he makes them a good *Feast*, and not only entertains them at his own *House*, but besides, gives them *Money* to spend at the *Ale-house* or *Tavern* at *Night* ; And to this *Feast*, they invite the *Correcter*, *Founder*, *Smith*, *Joyner*, and *Inck-maker*, who all of them severally (except the *Correcter* in his own *Civility* ) open their *Purse-strings* and add their *Benevolence* (which *Workmen* account their duty, because they generally chuse these *Workmen*) to the *Master Printers* : But from the *Correcter* they expect nothing, because the *Master Printer* chusing him, the *Workmen* can do him no kindness.

These *Way-gooses*, are always kept about *Bartholomew-tide*. And till the *Master-Printer* have given this *Way-goose*, the *Journey-men* do not use to *Work* by *Candle Light*.

If a *Journey-man* marry, he pays half a *Crown* to the *Chappel*.

B b b 3

When:



When his Wife comes to the *Chappel*, she pays six Pence : and then all the Journey-men joyn their two Pence apiece to Welcome her.

If a Journey-mán have a Son born, he pays one Shilling.

If a Daughter born, six Pence.

The *Father* of the *Chappel* drinks first of *Chappel Drink*, except some other Journey-man have a *Token*; viz. Some agreed piece of Coin or Mettle markt by consent of the *Chappel* : for then producing that *Token*, he Drinks first. This *Token* is always given to him who in the Round should have Drank, had the last *Chappel-drink* held out. Therefore when *Chappel-drink* comes in, they generally say, *Who has the Token?*

Though these Customs are no *Solaces*; yet the *Chappel* Excommunicates the delinquent; and he shall have no benefit of *Chappel-money* till he have paid.

It is also Customary in some Printing-houses that if the *Compositer* or *Press-man* make either the other stand still through the neglect of their contracted Task, that then he who neglected, shall pay him that stands still as much as if he had Wrought.

The *Compositors* are Jocosely call'd *Galley Slaves* : Because allusively they are as it were bound to their *Gallies*.

And the *Press-men* are Jocosely call'd *Horses* : Because of the hard Labour they go through all day long.

An Apprentice when he is Bound pays half a Crown to the *Chappel*, and when he is made Free, another half Crown to the *Chappel*; but is yet no Member of the *Chappel*; And if he continue to Work

Work Journey-work in the same House, he pays another half Crown, and is then a Member of the *Chappel*.

A *Founding-House* is also call'd a *Chappel* : But I suppose the Title was originally assum'd by *Founders*, to make a Competition with *Printers*.

The Customes used in a *Founding-House* are made as near as may be to those of a *Printing-house* : but because the Matter they Work on, and the manner of their Working is different, therefore such different Customes are in Use, as are suitable to their Trade, As *First*, To call *Mettle Lead*, a Forfeiture.

*Secondly*, A Workman to let fall his *Mold*, a Forfeiture.

*Thirdly*, A Workman to leave his Ladle in the *Mettle Noon or Night*, a Forfeiture.

The *Printers of London*, Masters and Journey-men have every Year a general Feast, which since the re-building of *Stationers Hall* is commonly kept there. This Feast is made by four Stewards, *viz.* two Masters and two Journey-men ; which Stewards, with the Collection of half a Crown apiece of every Guest, defray the Charges of the whole Feast ; And as they Collect the Half-Crowns, they deliver every Guest a Ticket, wherein is specified the Time and Place they are to meet at, and the Church they are to go to : To which Ticket is affixed the Names and Seals of each Steward.

It is commonly kept on or about *May-day* : When, about ten a Clock in the Morning they meet at *Stationers Hall*, and from thence go to some Church thereabouts ; Four Whiffers (as *Servitures*) by two and

and two walking before with White Staves in their Hands, and Red and Blew Ribbons hung Belt-wise upon their left Shoulders. These go before to make way for the Company. Then walks the Beadle of the Company of *Stationers*, with the Companys Staff in his Hand, and Ribbons as the Whifflers, and after him the Divine (whom the Stewards before engag'd to Preach them a Sermon) and his Reader. Then the Stewards walk by two and two, with long White Wands in their Hands, and all the rest of the Company follows, till they enter the Church.

Then Divine Service begins, Anthems are Sung, and a Sermon Preached to fuit the Solemnity : Which ended, they in the same order walk back again to *Stationers Hall* ; where they are immediately entertain'd with the City Weights and other Musick : And as every Guest enters, he delivers his Ticket (which gives him Admittance) to a Person appointed by the Stewards to receive it.

The Master, Wardens and other Grandees of the Company (although perhaps no Printers) are yet commonly invited, and take their Seats at the upper Table, and the rest of the Company where it pleases them best. The Tables being furnish'd with variety of Dishes of the best Cheer : And to make the entertainment more splendid is Usher'd in with Loud Musick. And after Grace is said (commonly by the Minister that Preach'd the Sermon) every one Feasts himself with what he likes Best ; whiles the Whifflers and other Officers Wait with Napkins, Plates, Beer, Ale, and Wine, of all sorts, to accommodate each Guest according to his desire. And to make

make their Cheer go cheerfuller down, are entertained with Musick and Songs all Dinner time.

Dinner being near ended, the Kings and the Dukes Healths is begun, by the several Stewards at the several Tables, and goes orderly round to all the Guests.

And whiles these Healths are Drinking, each Steward sets a Plate on each Table, beginning at the upper end, and conveying it downwards, to Collect the Benevolence of Charitable minds towards the relief of *Primmers* Poor Widows. And at the same time each Steward distributes a Catalogue of such Printers as have held Stewards ever since the Feast was first kept, *viz.* from the Year of Christ 1621.

After Dinner, and Grace said, the Ceremony of Electing new Stewards for the next Year begins: Therefore the present Stewards withdraw into another Room: And put Garlands of Green Lawrel, or of Box on their Heads, and White-wands in their Hands, and are again Usher'd out of the withdrawing Room by the Beadle of the Company, with the Companys Staff in his Hand, and with Musick sounding before them: Then follows one of the Whiffers with a great Bowl of White-wine and Sugar in his Right Hand, and his Whiffers Staff in his Left: Then follows the Eldest Steward, and then another Whiffler, as the first, with a Bowl of White-wine and Sugar before the second Steward, and in like manner another Whiffler before the Third, and another before the Fourth. And thus they walk with Musick sounding before them three times round the Hall: And in a fourth round the first Steward takes

C c c

the

the Bowl of his Whiffler and Drinks to one (whom before he resolved on) by the Title of Mr. Steward Elect: And taking the Garland off his own Head puts it upon the Steward Elects Head. At which Ceremony the Spectators clap their Hands, and such as stand on the Tables or Benches, so Drum with their Feet that the whole Hall is filled with Noise, as applauding the Choice. Then the present Steward takes out the Steward Elect, giving him the Right Hand, and walks with him Hand in Hand, behind the three present Stewards another Round about the Hall: And in the next Round, as aforesaid, the second Steward Drinks to another with the same Ceremony as the first did; and so the Third Steward, and so the Fourth, and then all walk one Round more Hand in Hand about the Hall, that the Company may take notice of the Stewards Elect. And so ends the Ceremony of the Day.

This Ceremony being over, such as will go their ways; but others that stay, are Diverted with Musick, Songs, Dancing, Farcings, &c. till at last they all find it time to depart.



A  
DICTIONARY,

Alphabetically explaining the abstruse  
VVords and Phrases that are used in  
Typography. VVhich also may serve as  
an Index to direct to the most material  
Concerns contained in this Volumn.

**T**Hough I give you a Dictionary of so many  
Words and Phrases as are mentioned in these  
*Exercises*, yet I do not exhibit this as a *Di-*  
*ctionary* so perfect, that all the obstruse  
Words and Phrases used among *Printers*, *Letter-*  
*cutters* and *Founders* are here exposed; for Words  
and Phrases many times offer themselves either as  
Discourse or Contemplation occurs: Therefore such  
Words and Phrases as have escaped my Considerati-  
on, will, I hope, be discovered by some Printer, or  
others, that may have a kindness for Posterity; not  
only in this Trade, but in all Trades and Faculties  
whatsoever: That so a *Dictionary* may in time be  
compleated, that may render so great a number of  
Words used in *England* by *English-men* intelligible;  
which now for want of a proper Repository to store  
them in, seem not only Aliens to our Nation, but  
barbarous to our Understandings.

## A

*Abbreviations* are Characters, or else marks on *Letters*, to signifie either a Word or Syllable. & is the Character for And, & is The abbreviated, & is That abbreviated; and several other such. Straight stroaks over any of the Vowels abbreviates m or n. They have been much used by Printers in Old Times, to *Shorten* or *Get in Matter*; but now are wholly left off as obsolete.

*Accented Letters* are much used in *Latin* Authors, and more in *Greek*. The Vowels are only accented, and are called *Grave*, thus accented à; *Acute*, thus accented á; *Circumflex*, thus accented â; and *Deere-cis*, thus accented ä.

*Accents* are Dashes or Marks over the Vowels.

*Air-hole*. See § 18. ¶ 1. Vol. 2.

*Ascending Gage*. See § 12. ¶ 5. Vol. 2.

*Asbes*. *Letter-Founders* call the *Skimmings* of their *Mettle*, and the Sweepings of their House *Asbes*; and save both, to send to the Refiners; who with their fierce Fire draw all the *Mettle* out of the *Asbes*. See *Fat Asbes*. See *Lean Asbes*.

*Ash-hole*. See § 18. ¶ 1. Vol. 2.

*Affidue* is Thin Brass Plate, such as adorns *Bartholomew-Fair* Hobby Horses: *Founders* use it to *Underlay* the *Body*, or the *Mouth-piece*, &c. of their *Mold*, if it be too Thin. See § 16.

## B

*Back of a Composing-stick*. See § 9. ¶ 4. Vol. 2.

*Backside of the Form* is the underside that touches upon the *Correcting-stone* or *Press-stone*.

*Bad Copy*. See § 24. ¶ 4. Vol. 2.

*Bad*

*Bad work.* Any Fault at the *Cafe*, or *Press*, or at the *Furnace*, or at the *Dressing-block*, &c. is in Workmens Language called *Bad Work*.

*Bake.* See § 22. ¶ 10. Vol. 2.

*Balls.* See § 24. ¶ 10. Vol. 2.

*Ball-knife.* An old blunt-edg'd Knife, that *Press-men* lay by, to scrape their *Balls* with.

*Ball-leathers.* See § 24. ¶ 10. Vol. 2.

*Ball-Nails.* The *Nails* that *Ball-leathers* are Tack't to the *Ball-stocks* with.

*Ball-stocks.* See § 11. ¶ 21. Vol. 2.

*Balls Take.* See § 11. ¶ 21. Vol. 2.

*Beak.* See § 12. ¶ 2. Vol. 2.

*Beam.* See § 12. ¶ 4. Vol. 2.

*Beard of a Letter,* is the outer angle of the Square Shoulder of the *Shank*, which reaches almost up to the *Face* of the *Letter*; and is commonly scraped off by the *Founder*: As in § 2. ¶ 2. Vol. 2.

*Beard-Gage.* See § 13. ¶ 4. Vol. 2.

*Bearer.* See § 4. & § 24. ¶ 7. Vol. 2.

*Beat.* See § 24. ¶ 13. Vol. 2.

*Beat Fat.* If a *Press-man* Takes too much *Inck* with his *Balls*, he *Beats Fat*. The *Black English Faced Letter* is generally *Beaten Fat*.

*Beat Lean,* is to *Take* but little *Inck*, and often: All *Small Letter* must be *Beaten Lean*.

*Bed.* See § 24. ¶ 2. Vol. 2.

*Benvenue.* See *Ancient Customs*, Vol. 2.

*Bite.* See § 24. ¶ 7. Vol. 2.

*Blankets.* Woollen Cloath, or White Bays, to lay between the *Tympans*.

*Blocks.* See § 20. ¶ 3. Vol. 2.

*Block-Groove.* *ibid.*

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*Body.*

*Body.* See § 1. ¶ 2. & § 15. ¶ 1. Vol. 2.


*Botching Matrices.* See § 17. ¶ 3. Vol. 2.

*Bottom line.* See § 14. ¶ 2. Vol. 2.

*Bottom of the Matrice.* See § 17. ¶ 1. Vol. 2.

*Bottom Plate.* See § 15. ¶ 1. Vol. 2.

*Bow.* See § 15. ¶ 1. Vol. 2.

*Brace*, is a *Character Cast* in *Mettle* thus marked  The *Compositer* is to have these *Cast* of several Breadths, viz. to several numbers of *Lines* of a designed *Body* (most commonly of *Pica Body*) that they may hook in or *Brace* so many *Lines* as his *Copy* may shew him; as at *Charge* is a *Brace* of four *Lines*. See also § 24. ¶ 1. Vol. 2.

*Brass-Rules.* See § 2. ¶ 2. Vol. 2.

*Brayer* is a round *Wooden Rubber*, almost of the fashion of a *Ball-stock*, but flat at the bottom, and not above three Inches Diameter: It is used in the *Inck-Block* to *Bray* or *Rub Inck*.

*Break*, a piece of a *Line*. Also the *Mettle* that is contiguous to the *Shank* of a *New Cast Letter*: This *Break* is formed in the *Mouth-piece* of the *Letter-mould*, and is called a *Break*, because it is always broke from the *Shank* of a *Letter*.

*Breaking off* is breaking the *Break* from the *Shank* of the *Letter*. See § 19. ¶ 3. Vol. 2.

*Brevier.* See § 2. ¶ 2. Vol. 2.

*Broad-side*, a *Form* of one full *Page*, Printed on one side of a whole Sheet of Paper.

*Broken Letter.* By broken *Letter* is not meant the breaking of the *Shanks* of any of the *Letters*, but the breaking the orderly Succession the *Letters* stood in in a *Line*, *Page*, or *Form*, &c. and mingling the *Letters*

ters together, which mingled *Letters* is called *Py*.

*Bur*. See *Rag*.

## C

*Cannon*. See § 2. ¶ 2. Vol. 2.

*Card*. When several *Bodies* of *Letter* are Set in a *Page*, *Compositers* to *Justifie* that *Page* to an exact Length, put a *Card* to some *White-line*, or other *Break* and Lengthen out the *Page* the thickness of a *Card*. And *Press-men* also use a *Card* for an underlay. See § 22. ¶ 4. &c. § 24. ¶ 7.

*Cards*. About a *Quire* of Paper, which *Press-men* use to Pull down the Spring or rising of a *Form*, which it is many times subject to by hard *Locking-up*. See § 24. ¶ 4.

*Carriage*, is a part of the *Press*. For which See § 10. ¶ 9. Vol. 2. It is also a part of the *Letter-Mold*: For which See § 15. ¶ 3. Vol. 2.

*Cafe*. See § 3. Vol. 2.

*Cafe lies*. See § 22. ¶ 1.

*Cafe is full*, viz. a *Cafe* full of *Letter*, wanting no *Sorts*.

*Cafe is Low*. When a *Cafe* grows empty, *Compositers* say the *Cafe is Low*.

*Cafe Stands still*. When the *Compositer* is not at Work at his *Cafe*, it is said, *The Cafe stands still*.

*Cassie Paper*. See § 25. ¶ 5. Vol. 2.

*Cast*, is to *Cast Letter*. See § 19. ¶ 1. Vol. 2.

*Cast off Copy*. See § 22. ¶ 9. Vol. 2.

*Catch of the Bar*. See § 11. ¶ 11. Vol. 2.

*Chappel*. See *Customs*.

*Charge*,



*Charge*, is to fill { *Paper* with great *Pages*.  
                               a *Page* with long and many *Lines*.  
                               a *Line* with many *Letters*.  
                               a *Pot* with *Stubs* and *Antimony*.

*Chafe*. See § 9. ¶ 6. Vol. 2.

*Cheeks*. is a part of the *Press*; for which See § 10. ¶ 2. Vol. 2. and part of the *Dressing-block-groove*. For which See § 20. ¶ 3. Vol. 2.

*Choak*. If a *Form* be not Washt in due time, the *Inck* will get into the Hollows of the *Face* of the *Letter*: And that getting in of the *Inck* is called *Choaking* of the *Letter*, or *Choaking* of the *Form*.

*Claw* of the *Sheeps-foot*. See § 11. ¶ 20. Vol. 2.

*Clean Proof*. When a *Proof* has but few *Faults* in it, it is called a *clean Proof*.

*Close Matter*. *Matter* with few *Breaks* or *Whites*.

*Close Work*. *ibid*.

*Colation Books*. See § 25. ¶ 4. Vol. 2.

*Come*. When the *Face* and *Shank* of a *Letter* is *Cast* perfect, *Founders* say, *It Comes well*; if unperfect they say, *It does not come*, or *It comes not well*.

*Come Down*. the *Toe* of the *Spindle* is said to *Come down* by *Pulling* the *Bar*: So is the *Bar* when it is *Pull'd* near the *hither Cheek*: Also, the *Press-man* is said to *Come down the Form* with his *Balls*: For which See § 24. ¶ 13. Vol. 2.

*Companion*. See § 24. ¶ 15. Vol. 2.

*Comes off*. A *Form* that receives a good *Impression*, *Comes off well*, if a bad *Impression*, it *Comes off ill*, or it *Comes not well off*. Also a phrase used in *Gathering* of *Books*; for a *Heap* that is *Gathered off* is said to *Come off*. See § 25. ¶ 3. Vol. 2.

*Com-*

*Composing Rule.* See § 24. ¶ 4. Vol. 2.

*Compositer.* He that *Composes* or *Sets* the *Letters*.

*Composing-stick.* See § 9. ¶ 4. Vol. 2.

*Copy-money.* See *Customs*.

*Cording-quire.* See § 25. ¶ 5. Vol. 2.

*Correct.* When the *Corrector* reads the *Proof*, or the *Compositer* mends the *Faults* he markt in the *Proof*, they are both said to *Correct*; the *Corrector* the *Proof*, the *Compositer* the *Form*.

*Correcting-stone.* See § 6. Vol. 2.

*Corrections.* the *Letters* markt in a *Proof* are call'd *Corrections*. See § 22. ¶ 8. Vol. 2.

*Counter Punch.* See § 13. ¶ 2. Vol. 2.

*Counting off Copy.* See § 22. ¶ 9. Vol. 2.

*Coyns.* See § 8. Vol. 2.

*Cramp Irons.* See § 11. ¶ 15. Vol. 2.

*Cross Long, Short.* See *Chase*.

*Cull Paper.* See § 25. ¶ 5. Vol. 2.

*Cut the Frisket.* See § 24. ¶ 7. Vol. 2.

D

*Dance.* See § 22. ¶ 7. Vol. 2..

*Dele.* See § 23. Vol. 2.

*Destribute.* See § 22. ¶ 3. Vol. 2.

*Destributing-stick.* See *ibid*.

*Devil.* The *Press-man* sometimes has a *Week-Boy* to *Take Sheets*, as they are *Printed off* the *Tympan*: These Boys do in a *Printing-House*, commonly black and Dawb themselves; whence the *Workmen* do *Jocosely* call them *Devils*; and sometimes *Spirits*, and sometimes *Flies*.

*Direction,* the word that stands alone on the *Right Hand* in the bottom *Line* of a *Page*.

D d d

*Dire-*

*Direction-line.* The *Line* the *Direction* stands in.

*Double Letter.* æ œ ſt ſh, and ſeveral others *Caſt* on one *Shank* are called *Double Letters*: ſ and f have ſeveral *Ascending Letters* joyned to them, becauſe their *Beaks* hanging over their *Stems* would (were they not *Caſt* on one *Shank*) ride upon the tops of the *Stems* of the adjoining *ascending Letter*.

*Double.* A Sheet that is twice *Pulled* and liſted never ſo little off the *Form* after it was firſt *Pulled*, does moſt commonly (through the Play of the *Joynts* of the *Tympan*) take a double *Impreſſion*: This Sheet is ſaid to *Double*. Or if the *Preſs-man* Run in ſo, as the Fore-ſide of the *Plattin* Print with the *Fiſt Pull* into part of the *Second Pull*, or the hind edge of the *Plattin* Print with his *Second Pull* into part of his *Fiſt Pull*; either of theſe twice Printing is called *Doubling*. *Doubling* alſo happens through the looſe *Hanging* of the *Plattin*, and through too much play the *Tennants* of the *Head* may have in the *Morteffes* of the *Cheeks*, and indeed through many *Wearings* and craſienerſſes that often happens in ſeveral parts of the *Preſs*. See § 24. ¶ 18. Vol. 2.

*Dreſs a Chaſe*, or *Dreſs a Form*, is all one. It is to fit the *Pages* and the *Chaſe* with *Furniture* and *Quoins*. See § 22. ¶ 7. Vol. 2.

*Dreſs Letter.* See § 21. ¶ 1. Vol. 2.

*Dreſſing Block.* See § 20. ¶ 3. Vol. 2.

*Dreſſing Block-groove.* ibid.

*Dreſſing Hook.* See § 20. ¶ 1. Vol. 2.

*Dreſſing Knife.* See § 20. ¶ 4. Vol. 2.

*Dreſſing Sticks.* See § 19. ¶ 6. Vol. 2.

*Drive out.* When a *Compoſiter* Sets Wide, he is ſaid to

to *Drive out* or *Run out*. In *Founding*, If *Letter* be *Cast* too *Thick* in the *Shank* it *Drives out*, or if it be *Cast* too *Thick* in any part of the *Shank*, as the *Head*, the *Foot*, the *sides* at *Head* or *Foot*, or *Body* at *Head* or *Foot* : They say, *It Drives out at Head*, *It Drives out at Foot*, &c.

## E

*Empty Case*. See § 22. ¶ 3. & See *Case is Low*.

*Easie Pull*. See § 24. ¶ 5. Vol. 2.

*Easie Work*. See § 22. ¶ 4. And *Great Letter* and a *Small Form* the *Press-man* calls *Easie Work*.

*Empty Press*. A *Press* that *Stands by*, which no *Workman* *Works at* : Most commonly every *Printing-House* has one of them for a *Proof-Press* : viz. to make *Proves on*.

*English Body*. See § 1. ¶ 2. Vol. 2.

*English Face*. Plate 26. 27. are *English Face Letters*.

*Even Page*. The *First Page* of a *Sheet* or *Form* is called an *Odd Page*, but the *Second*, *Fourth*, *Sixth*, or any other even numbred *Page* is called an *Even Page*. See § 22. ¶ 7. Vol. 2.

## F

*Face of a Letter*, See § 13. ¶ 13. Vol. 2.

*Face of a Page, or Form*. The *Superficies* of a *Page* or *Form*, where the *Faces* of every *Letter* lies in the same *Plain*.

*Face-Gage*. See § 12. ¶ 5. Vol. 2.

*Face of a Matrice*. See § 17. ¶ 1. Vol. 2.

*Fat Ashes*. *Founders* call their *Ashes Fat*, if they are considerably *Heavy*, because then they have much *Mettle* in them.

*Fat*. See *Beat Fat*.

*Fat Face*, or *Fat Letter*, is a broad Stemmed Letter.

*Female Gage*, *Screws*, &c. The *Hollow Gage*, or *Hollow Screw* that receives its *Match Gage* or *Screw*, &c.

*First*. See § 24. ¶ 15. Vol. 2.

*First Form*. The *Form* the *White Paper* is Printed on, which generally by Rule ought to have the *First Page* of the Sheet in it.

*First Page*. See § 22. ¶ 7. Vol. 2.

*First Pull*. See § 11. ¶ 16. & § 24. ¶ 7. Considerations 8. & § 24. ¶ 15. Vol. 2.

*Flat-Gage*. See § 12. ¶ 3. Vol. 2.

*Flat Table*. See § 12. § 8. Vol. 2.

*Fly*. See *Devil*.

*Follow*. viz. *See if it follows*, is a Term used as well by the *Corrector* as by the *Compositer* and *Press-man*. It is used by the *Corrector* and *Compositer* when they examine how the beginning *Matter* of a succeeding *Page* agrees with the ending *Matter* of the precedent *Page*: And how the *Folio's* of those *Pages* properly and numerically follow and succeed one another, Left the *Pages* should be *Transposed*. But the *Press-man* only examines that the *Folio* and beginning word of the *Second Page*, and *Signature* of the *First* and *Third Page* (when the *Reteration* is on the *Press*) follows the *Folio* and *Direction* of the *First Page*, and the *Signature* of the *Third Page* follows the *Signature* of the *First Page*, orderly according to the *Volumne*, lest the *Form* should be laid wrong on the *Press*.

*Foot of the Letter*. The *Break-end* of the *Shanck* of a *Letter*.

*Foot-*



*Foot-line.* See § 14. ¶ 12. Vol. 2.

*Foot of a Page.* The bottom or end of a *Page*. See § 22. ¶ 7.

*Foot-Step.* See § 11. ¶ 21. & § 24. ¶ 7. & Considerations 11. Vol. 2.

*Foot-stick.* See § 8. Vol. 2.

*Form.* The *Pages* when they are fitted into a *Chase*.

*Foul Proof.* When a *Proof* has many *Faults* markt in it.

*Fount.* Is the whole number of *Letters* that are *Cast* of the same *Body* and *Face* at one time. See § 2. ¶ 2. Vol. 2.

*Frisket.* See § 10.

*Froze out.* In Winter when the Paper is Froze, and the *Letter* Froze, so as the Workmen cannot Work. They say, *They are Froze out*.

*Fryer.* When the *Balls* do not *Take*, the *Un-taking* part of the *Balls* that touches the *Form* will be left White, or if the *Press-men* Skip over any part of the *Form*, and touch it not with the *Balls*, though they do *Take*, yet in both these cases the White places is cal'd a *Fryer*.

*Full Form or Page.* A *Form* or *Page* with few or no *Breaks* or *White-lines*.

*Full Press.* When two Men Work at the *Press*. It is called a *Full Press*.

*Furnace.* See § 18. Vol. 2.

*Furnace open*, or *Wind Furnace.* See § 18. ¶ 2. Vol. 2.

*Funnel.* See § 18. Vol. 2.

*Furniture.* See § 8. Vol. 2.

## G

*Gage*. Gages mentioned in this Volumne have an adjunct Name, as *Flat Gage*, *Joynt Gage*, *Italick Gage*, *Long Gage*, *Male Gage*, *Short Gage*, *Standing Gage*, *Steel Gage*, which See respectively.

*Galley*. See § 5. Vol. 2.

*Galley-Slave*. See the Customs.

*Gallows*. See § 10. Vol. 2.

*Garter*. See § 11. ¶ 14. Vol. 2.

*Gather Books*. See § 25. ¶ 3. Vol. 2.

*Geat*, is the little Spout or Gutter made in the Brim of *Casting Ladles*.

*Get in*. Matter is Got in in a *Line*, *Page*, *Sheet* or *Book*, if *Letter* be Thinner Cast than the *Printed Copy* the *Compositer Sets* by. Or Matter is Got in if the *Compositer Sets Closer* : Or if he *Widens* his *Measure* ; or puts more *Lines* in a *Page*. See a *Line*.

*Girts*. See § 11. ¶ 21. Vol. 2.

*Good Colour*. Sheets Printed neither to Black or too White.

*Good of the Chappel*. Forfeitures and other *Chappel Dues* are Collected for the *Good of the Chappel*, viz. to be spent as the *Chappel* approves.

*Good Work*, is called so in a twofold sense : The Master-Printer calls it *Good Work* when the *Compositers* and *Press-men* have done their duty ; and the Work-men call it *Good Work*, if it be *Light Easie Work*, and they have a good price for it.

*Go up the Form*. See § 24. ¶ 13. Vol. 2.

*Great Cannon*. See § 2. ¶ 2. Vol. 2.

*Great Numbers*. See *Lay on*. Above 2000 Printed on one Sheet are accounted *Great Numbers*.

*Great*

*Great Primmer.* See § 2. ¶ 2. Vol. 2.

*Gutter-stick.* See § 8. Vol. 2.

## H

*Hag.* See § 15. ¶ 1. Vol. 2.

*Half a Line.* When *Letter Drives out* or *Gets in* in the *Body*, in a number of *Lines*, *Founders* say, *It Drives out* or *Gets in* *Half a Line*, a whole *Line*, a quarter of a *Line*, &c. viz. *Half a Body*, a whole *Body*, a quarter, &c. of a *Body*.

*Half a Press.* When but one *Man Works* at the *Press*, It is called *Half a Press*.

*Half Work.* He that *Works* but three days in the *Week*, does but *Half Work*.

*Hammer end of a Punch.* See § 13. ¶ 13. Vol. 2.

*Hangs.* See *Letter Hangs.* & § 22. ¶ 4. Vol. 2.

*Hang the Plattin.* See § 24. ¶ 4. Vol. 2.

*Hang up Paper.* See § 25. ¶ 1. Vol. 2.

*Hard Inck.* *Inck* very well *Boyled.* See § 11. ¶ 23. Vol. 2.

*Hard Justifying.* See § 22. ¶ 4. Vol. 2.

*Hard Pull.* See § 24. ¶ 5. Vol. 2.

*Hard Work.* See § 22. ¶ 4. And small *Letter* and a *Large Form*, *Press-men* call *Hard Work*.

*Head.* See § 10. ¶ 5. Vol. 2.

*Head Line.* See § 14. ¶ 2. Vol. 2.

*Head of a Page.* The top or beginning of a *Page.* See § 22. ¶ 7. Vol. 2.

*Head-stick.* See § 8. Vol. 2.

*Heap.* So many *Reams* or *Quires* as is *Set out* by the *Warehouse-keeper* for the *Press-man* to *Wet*, is call'd a *Heap*: But then it is call'd a *Dry Heap*, till the *Press-man* have *Wet* it, and then it is indeed called a *Heap*. See also § 25.

*Heap.*

*Heap holds out.* When it hath its full intended Number of Sheets.

*Heavy Work.* See *Hard Work*.

*Heighth.* See *High against Paper*.

*High against Paper.* If a *Punch* be not Sunk deep enough into the *Matrice*, the *Letter Cast* will not stand high enough against Paper. And if it be Sunk too deep into the *Matrice*, the *Letter Cast* will be too *High* against Paper. See § 17. ¶ 2. Vol. 2.

*Holds out, or Holds not out.* These Terms are applicable to the *Quires* of *White-paper*, to *Wrought-off Heaps*, to *Gathered Books*, and to sorts of *Letter* &c. If *Quires* of White Paper have twenty five Sheets a piece in them, they say, *The Paper holds out five and twenties*. Of *Wrought off Heaps*, the *Heap* that Comes off first in *Gathering* is said, *Not to Hold out*. Of *Gathered Books*, if the intended number of perfect *Books* are *Gathered*, they say the *Impression Holds out*: But if the intended number of *Perfect Books* cannot be *Gathered* off the *Heaps*, they say the *Impression Holds not out*. And so for Sorts of *Letter*, either when it is in the *Founding House*, or in the *Printing House*.

*Hole.* By a *Hole*, in Printers dialect, is meant and understood a place where private Printing is used, viz. the Printing of Unlicensed *Books*, or Printing of other mens *Copies*. Many Printers for Lucre of Gain have gone into *Holes*, and then their chief care is to get a *Hole* Private, and Workmen Trusty and Cunning to conceal the *Hole*, and themselves.

*Holy-days.* See *Customs*.

*Hollows of a Letter.* The *Sinking* in of the *Counter-*

*ter-Punch* into the *Punch* makes these *Hollows*, so does *Sculping* into the *Face* of the *Punch*. See § 9. ¶ 4. Vol. 2.

*Hooks*. See *Hags*.

*Horse*. The Form or Bench *Press-men* set the *Heaps* of Paper on. See also Customs.

*Horse-flesh*. If any Journeyman set down in his Bill on *Saturday Night* more Work than he has done, that Surplusage is called *Horse-flesh*: And he abates it in his next Bill.

*Hose*. See § 11. ¶ 14. Vol. 2.

*Hours*. *Press-men* reckon their Work by Hours, accounting every *Token* to an Hours Work: And though it be the same effectually with *Tokens*, yet they make their prizes of different Work by the Hour; and it passes current for a *Token*. If two Men Work at the *Press* ten *Quires* is an Hour; if one Man, five *Quires* is an Hour.

## I

*Jaws*. See § 15. ¶ 6. Vol. 2.

*Imperfections of Books*. See § 25. ¶ 3. Vol. 2.

*Imperfections of Letters*. When the *Founder* has not Cast a proportionable number of each sort of *Letter*, the wanting *Letters* are called *Imperfections*, as making the rest of the *Fount* unperfect. See *Sorts*.

*Impose*. See § 22. ¶ 7. Vol. 2.

*Impression holds out*. See *Holds out*.

*In-Page*. See *Out-Page*.

*Insertion*. If the *Compositer* have left out Words or *Lines*, the *Corrector* inserts it, and makes this mark ^ where it is *Left out*, which is called the mark for *Insertion*. See § 23. Vol. 2.



*Joynt flat Gage.* See § 14. ¶ 4. Vol. 2.

*Joynts.* See § 10. ¶ 9. Vol. 2.

*Inner Tympan.* See § 11. ¶ 10. Vol. 2.

*Italick Gage.* See § 12. ¶ 6. Vol. 2.

*Justifie a Matrice.* See § 17. ¶ 2. Vol. 2.

*Justifie a Mold.* See § 16. Vol. 2.

*Justifie a Stick.* viz. a *Composing-stick.* See § 22. ¶ 4. Vol. 2.

## K

*Keep in*, is a caution either given to, or resolved on, by the *Compositer*, when there may be doubt of *Driving out* his *Matter* beyond his *Counting off*, wherefore he *Sets close*, to *Keep in*.

*Keep out*, is a caution either given to or resolved on, by the *Compositer*, when there may be doubt of *Getting in* his *Matter* too fast for his *Counting off*: Wherefore he *Sets Wide*, to *Drive* or *Keep out*.

*Kern.* See § 19. ¶ 5. Vol. 2.

*Kerning-Knife.* See § 19. ¶ 5. Vol. 2.

*Kerning-stick.* See § 19. ¶ 5. Vol. 2.

*Knife backt Sculptor*, is a Sculptor with a thin edge on its back.

*Knife-file.* A file with a thin edge.

*Knock up Balls.* See § 24. ¶ 10. Vol. 2.

*Knock up Books.* See § 25. ¶ 3. Vol. 2.

*Knock up a Letter.* It sometimes happens with old *Letter*, that a *Letter* may be worn so low that it will not *Print* well in a *Page*: The *Workman* then takes that *Letter* out of the *Form*, and holds the *Shank* of it upon the side of the *Chase*, and with the *Head* of the *Shooting-stick* beats lightly upon the *Foot* of the *Shank*, till he have battered *Mettle* enough.

enough out of the *Shank*, to raise it higher against Paper: If it prove too high against Paper, he Rubs the bottom of the *Shank* upon the side of the *Chase* to rub it down: This Operation seldom happens, unless another of the same sort of *Letter* is wanting, and hard to come by: For else the *Compositer* will bow the *Letter*, and pop it into a *Waste Box* in his *Cafe*, where he puts all naughty *Letters*, that he may not be troubled with them another time.

*Knot*. See § 20. ¶ 3. Vol. 2.

## L

*Ladles*. See § 18. ¶ 3. Vol. 2.

*Lay in Sheets*. When the *Press-man* lays *Sheets* on the *Tympan*, it is stiled *Laying in Sheets*.

*Lay out Sheets*. When the *Press-man* takes *Sheets* off the *Tympan*, and lays them on the *Heap*, it is stiled *Laying out Sheets*.

*Lay on*. A phrase used for the Number of Books to be Printed. Thus they say, There is 1000, 2000, 3000, &c. *Laid on*. See *Great Numbers*. See *Small Numbers*.

*Lean Ashes*. Founders call their *Ashes Lean*, if they are *Light*; because then they have little *Mettle* in them. See *Fat Ashes*.

*Lean*. See *Beat Lean*.

*Lean Face*. A *Letter* whose *Stems* and other *Stroaks* have not their full width.

*Lean Stroaks*. The fine *Stroaks* in a *Letter*.

*Leather Groove*. See § 17. ¶ 2. Vol. 2.

*Letter-Board*. See § 7. Vol. 2.

*Letter Hangs*. If the *Compositer* has been careless in Emptying his *Composing-stick*, so as to set the *Letter*

loosely down in the *Galley*, and they stand not perfectly Square and Upright, the *Letter Hangs* : Or if after *Overrunning* on the *Correcting-stone* he has not Set his *Letter* in a Square position again, before he *Locks up*, ( for we may suppose when the *Pages* are Open'd the *Letter* stands Loose, and more or less out of Square ) So then, the *Matter* standing thus out of Square, is said to *Hang*. See § 22. ¶ 4, 7. Vol. 2.

*Light Work*. See *Easte Work*.

*Liner*. See § 12. ¶ 7. Vol. 2.

*Lining-Stick*. See § 16. ¶ 2. Vol. 2. ☉

*Lock up*. See § 22. ¶ 7. and § 21. ¶ 1. Vol. 2.

*Long Crofs*. See *Chafe*.

*Long Gage*. See § 12. ¶ 5. Vol. 2.

*Long Primmer*. See § 2. ¶ 2. Vol. 2.

*Long Pull*. See § 24 ¶ 5. Vol. 2.

*Loose Justifying*. See § 22. ¶ 4. Vol. 2.

*Low against Paper*. See *Height against Paper*.

*Low Case*. When the *Compositer* has *Compos'd* almost all his *Letters* out of his *Case*, he says his *Case* is *Low*.

*Lower Case*. See § 3. Vol. 2.

## M

*m Thick*. See § 13. ¶ 1 Vol. 2.

*Make a Measure*. See § 22. ¶ 4. Vol. 2.

*Make ready the Form*. See § 24. ¶ 7. Vol. 2.

*Male Gage*. The outer *Gage*, or outer *Screw*, that enters or fits into its *Match Gage* or *Screw*, &c.

*Mallet*. See § 9. Vol. 2.

*Matrice*. See § 17. ¶ 1. Vol. 2.

*Matter*. The series of the discourse of the *Compositer*. Copy. Mea-

*Measure.* The width of a *Page*. See *Composing-Stick*.

*Mettle.* See § 18. ¶ 2. Vol. 2.

*Mold.* See § 15. ¶ 1. Vol. 2.

*Monk.* When the *Prefs-man* has not *Destributed* his *Balls*, some splotches of *Inck* may lye on one or more of them, which in *Beating* he delivers upon the *Form*; so that the Sheet Printed on has a black blotch on it: Which Blotch is called a *Monk*.

*Mouth-piece.* See § 15. ¶ 1. Vol. 2.

## N

*n Thick.* See § 13. ¶ 1. Vol. 2.

*Naked Form, or Page,* is when the *Furniture* is taken from about all sides of the *Form* or *Page*. See § 22. ¶ 7. Vol. 2.

*Neck of a Letter.* So much of the *Punch* as is Sunk into the *Matrice* is called the *Neck*; and when that *Letter* is *Cast* of *Mettle*, it is so much as comes above the Square of the *Shank*, viz. above the *Beard*.

*Nick.* See § 15. ¶ 1. Vol. 2.

*Nomparel.* See § 2. ¶ 2. Vol. 2.

*Notch of the Matrice.* See § 17. ¶ 2. Vol. 2.

*Notes.* Quotations down the side of a *Page* are called *Notes*.

*Number Laid on.* See *Lay on*.

*Nut of the Spindle.* The *Female Screw* that receives the *Worms* of the *Spindle*.

## O

*Odd Page.* The First, Third, Fifth, Seventh, and all un-even numbred *Pages* are *Odd Pages*.

*Off.* A *Prefs-man* usually says, *I am off*, meaning he

has *Wrought off* his *Token*, his *Heap*, his *Form*.

*Open Matter*. Full of *Breaks* and *Whites*.

*Open Furnance*. See § 18. ¶ 2. Vol. 2.

*Open the Form*. See § 22. ¶ 2. Vol. 2.

*Open Work*. See *Open Matter*.

*Over-run*. See § 22. ¶ 8. Vol. 2.

*Out*. A *Compositer* usually says, *I am Out*, meaning he has *Set out* his *Page*, *Form*, or *Copy*. See also § 23. Vol. 2.

*Out-Page*. In *Octavo's*, *Twelves*, *Sixteens*, every *Out-side Page* in the *Sheet* is called an *Out-Page*, the rest are called *In-pages*.

*Out of Register*. Bad *Register*. See § 24. ¶ 7. Vol. 2.

P

*Pale Colour*. If there be not *Blacking* enough in the *Inck*, or the *Form* be *Beaten* with too *Lean Balls*, the *Work* will be said to have a *Pale Colour*.

*Pallat*. See § 15. ¶ 1. Vol. 2.

*Pan*. The great *Ladle* that *Founders* melt their *Mettle* in, when they are *Casting Letters*, is called the *Pan*. See also § 9. ¶ 18. Vol. 2.

*Paper-bench*. See *Horse*.

*Papers-board*. See § 7. Vol. 2.

*Paper the Casq*. See § 22. ¶ 1. Vol. 2.

*Paper Windows*. See *Customs*.

*Paper up Letter*. *Pages*. See § 22. ¶ 10. Vol. 2.

*Pearl*. See § 2. ¶ 2. Vol. 2.

*Peel*. See § 11. ¶ 22. Vol. 2.

*Pelts*. Sheep *Skins* untan'd, used for *Ball Leathers*.

*Pica*. See § 2. ¶ 2. Vol. 2.

*Picks*. When either pieces of the *Skin* or *Film* that grows on *Inck* with standing by, or any dirt get into the



the *Hollows* of the *Face* of the *Letter*, that *Film* or *Dirt* will fill or choak up the *Face* of the *Letter*, and *Print Black*; and is called a *Pick*; because the *Press-man* with the point of a *Needle*, picks it out.

*Pidgeon-holes.* See § 22. ¶ 24. Vol. 2.

*Plattin.*

*Plattin-books.*

*Plattin-pan.*

*Plattin-plate.*

} See § 9. ¶ 18. Vol. 2.

*Play with Quadrats.* See *Customs*.

*Plow.* See § 20. ¶ 5. Vol. 2.

*Points.* See § 11. ¶ 19. Vol. 2. Also ,; : - - ? ! ( )

[ \* § †, and other marks, are all by *Printers* and *Founders* called *Points*.

*Point-holes.* The two Holes the *Points* prick in a *Sheet* of *Paper*. See § 22. ¶ 7. Vol. 2.

*Point-Screws.* See § 11. ¶ 9. Vol. 2.

*Press.* See § 10. Vol. 2.

*Press-man.* See § 24. ¶ 1. Vol. 2.

*Press goes.* When the *Press-men* are at *Work*, the *Press* is said to *Go*.

*Press goes Hard, Heavy.* See § 24. ¶ 5. and *Press goes Easie, Light*.

*Press stands still.* When the *Press-men* are not at *Work*, the *Press* is said to *stand still*.

*Press-stone.* See § 11. ¶ 17. Vol. 2.

*Proof.* See § 24. ¶ 18. Vol. 2.

*Proof Letters.* See § 16. ¶ 2. Vol. 2.

*Proof Press.* See *Empty Press*.

*Print Hand.* See *Plate* 11, 12, 13, 14, 15, 16, 17.

*Pull* — *Easie, Long, Short, Soft.* See § 24. ¶ 5. Vol. 2.

*Punch.*

*Punch.* See § 13. ¶ 1. Vol. 2.

*Py.* when a *Page* is broken, those broken *Letters* are called *Py.* See *Broken Letter.*

## Q

*Quadrats.* See § 19. ¶ 1. Vol. 2.

*Quarters.* *Quarto's*, *Octavo's* and *Twelves* *Forms* are *Imposed* in *Quarters.* They are called *Quarters*, not from their equal divisions; but because they are *Imposed* and *Lockt up* apart. Thus half the *Short-Cross* in a *Twelves* *Form* is called a *Quarter*, though it be indeed but one Sixth part of the *Form.*

*Quoins.* See § 8. Vol. 2.

*Quotation Quadrats,* Are *Cast* the height of the *Quotation.* They are *Cast* of different *Bodies*, that the *Compositer* may have choice of them to *Justifie* his *Notes* or *Quotations* exactly against the designed *Line* of the *Page.*

## R

*Racks.* See § 11. ¶ 22. & § 12. ¶ 19. Vol. 2.

*Rag.* When *Letter Cast* has a Bur on any of its edges, that Bur is called a *Rag.*

*Register.* See § 15. ¶ 1. & § 24. ¶ 7. Vol. 2.

*Register-sheet.* The Sheet or Sheets Printed to make *Register* with.

*Reteration.* The *Second Form*, or the *Form* Printed on the backside of the *White Paper.*

*Revise.* See § 23. Vol. 2.

*Ribs.* See § 10. ¶ 8. & § 11. ¶ 15. Vol. 2.

*Riglet.* Is a sort of *Furniture* of an equal *Thicknefs* all its *Length.* It is *Quadrat* high, of several *Thicknesses*, viz. a *Nomparel*, *Brevier*, *Long-primmer*, *Pica*, &c. *Thick.*

*Rince*

*Rince the Form.* See § 22. ¶ 2. Vol. 2.

*Rincing-Trough.* The Trough Forms are *Rinced* in. *Rise.* A Form is said to *Rise*, when in Rearing it off the *Correcting-stone* no Letter or Furniture, &c. stay behind. See § 22. ¶ 7. Vol. 2.

*Rounce.* See § 11. ¶ 16. Vol. 2.

*Rowl up the Ball Leathers.* See § 24. ¶ 18. Vol. 2.

*Rub Letter.* See § 19. ¶ 4. Vol. 2.

*Rubs not.* When the *Shank* is *Cast* too *Thin*, that in *Rubbing* part of the *Face* or the *Topping* or *Footing* *Rubs* away : *Founders* say, *It does not Rub*.

*Rubs well.* When the *Shank* of a *Letter* has a proper Thickness, *Founders* say, *It Rubs well*.

*Rub out Ink.* See § 24. ¶ 11. Vol. 2.

*Rules.* viz. *Brass Rules.* See § 2. ¶ 2. Vol. 2.

*Run in the Carriage.* See § 24. ¶ 15. Vol. 2.

*Runs on Sorts,* when *Matter* runs much on some few *Sorts* of *Letters*, they say, *it Runs on Sorts*, See *Sorts*.

*Run out from Copy.* See *Drive out*.

S

*Scaboard.* See § 8. Vol. 2.

*Second at the Press.* See § 24. ¶ 15. Vol. 2.

*Second Pull.* See § 11. ¶ 16. Considerations 8. & § 24. ¶ 15. Vol. 2.

*Sets Foul.* See *foul Proof*.

*Sets Clean.* See *Clean Proof*.

*Sets Close.* See *Get in*.

*Sets Wide.* See *Drive out*.

*Set out Paper.* See § 25. ¶ 5. Vol. 2.

*Set the Rounce.* See § 24. ¶ 3. Vol. 2.

*Sets off.* Work that is newly *Wrought off* at the *Press*

F f f

often

often *Sets off*, especially if it be *Fat Beaten* with *Soft Inck*: For when it comes to be *Beaten*, or sometimes only hard prest by the *Book-binder*, the moist *Inck* spreads and delates it self round about the *Face* of every *Letter*, and fullies and stains the whole *White Paper*.

*Shake*. See § 19. ¶ 1. Vol. 2.

*Shank*, the square *Mettle* the *Face* of a *Letter* stands on, is called the *Shank* of a *Letter*.

*Sheeps-foot*. See § 11. ¶ 20. Vol. 2.

*Shooting-stick*. See § 9. ¶ 2. Vol. 2.

*Short-cross*. See *Chase*.

*Short-Page*. See § 12. ¶ 5. Vol. 2.

*Side-stick*. See § 8. Vol. 2.

*Signature*. See § 22. ¶ 4. Vol. 2.

*Sinck Matrices*. See *Sinck Punches*.

*Sinck Punches*. See § 17. ¶ 1. Vol. 2.

*Slice*. See § 11. ¶ 11. Vol. 2.

*Sliding-Gage*. See § 12. ¶ 4. Vol. 2.

*Sliding-Socket*. See § 12. ¶ 4. Vol. 2.

*Small Numbers*. Under 1500 *Laid on* is accounted a *Small Number*. See *Great Numbers*; and See *Lay on*.

*Smoak Vent*. See § 18. ¶ 1. Vol. 2.

*Smout*. Workmen, when they are out of constant Work, do sometimes accept of a Day or twos Work, or a Weeks Work at another Printing-house: this By-work they call *Smouting*.

*Soaking Pull*. See § 24. ¶ 5. Vol. 2.

*Soft Pull*. *ibid*.

*Soft Inck*. *Inck* or *Varnish* moderately boiled. See § 11. ¶ 23. Vol. 2.

*Solace*. See *Customs*.

*Sop the Balls.* When a *Press-man* has taken too much *Inck*, he is said to *Sop the Balls*.

*Sorts.* The *Letters* that lye in every *Box* of the *Cafe* are separately called *Sorts* in *Printers* and *Founders* Language; Thus a is a *Sort*, b is a *Sort*, c is a *Sort*, &c.

*Space Thick, Space Thin.* See § 12. ¶ 1. Vol. 2.

*Spindle.* See O 11. ¶ 12. 16. Vol 2.

*Spirit.* See *Devil*.

*Spring.* See § 15. ¶ 1. Vol. 2.

*Squabble.* A *Page* or *Form* is *Squabbled* when the *Letter* of one or more *Lines* are got into any of the adjacent *Lines*; or that the *Letter* or *Letters* are twisted about out of their square Position.

*Stem.* The strait *Flat* stroaks of a straight *Letter* is called *Stem*. See § 14. ¶ 1. Vol. 2.

*Stick.* The *Composing-stick* commonly so called.

*Stickfull.* See § 22. ¶ 4. Vol. 2.

*Stiff Justifying.* See § 22. ¶ 4. Vol. 2.

*Stirring-Pote.* See § 18. ¶ 2. Vol. 2.

*Stoak-hole.* See § 18. ¶ 1. Vol. 2.

*Stoaking-Rod.* A Rod of thick *Wyer* put into such an *Handle* as is the *Handle* of a *Letter-Ladle*. *Founders* use it to stir up the *Fire* in the *Furnace*.

*Stone.* See § 19. ¶ 1. Vol. 2.

*Stool.* See § 15. ¶ 1. Vol. 2.

*Stop.* See § 19. ¶ 1. Vol. 2.

*Strip a Form.* See § 22. ¶ 2. Vol. 2.

*Stroaks,* are fat, lean, fine, hair. See § 14. ¶ 2. Vol. 2.

*Superiour Letters,* are often set to *Marginal Notes*: They are *Letters* of a *Small Face*, high *Justifyed* by



the Founder in the *Mold* near the *Top-Line*.

*Swash-Letters*. See Plate 15.

T

*Tache*. A small Board with *Notches* in its Fore-edge; either nailed upon the Fore-edge of the *Work-Bench*, or screwed into the *Vice*; so as the *Notches* may stand forwards to rest the *Shank* of a *Punch* in. See. § 12. ¶

9. Vol. 2.

*Tail of Letters*. See a 14. ¶ 2. Vol. 2.

*Take off* See Customs.

*Taking off*. See § 22. ¶ 3. Vol. 2.

*Take up*. See § 22. ¶ 3. Vol. 2.

*Take up a Sheet*. See Customs.

*Take Inck*. See § 24. ¶ 10. Vol. 2.

*Teze Wooll, or Hair*. See § 24. ¶ 18. Vol. 2.

*Thick Letter*. A *Fount of Letter* that *Rubs* not high enough into the *Neck* is called *Thick Letter*; and consequently will *Drive out Matter*. See § 17. ¶ 2. Vol. 2.

*Thick Space*. See § 13. ¶ 1. Vol. 2.

*Thin Space*, ought by a strict orderly and methodical measure to be made of the Thickness of the seventh part of the *Body*; though *Founders* make them indifferently Thicker or Thinner.

*Throat*. See § 15. ¶ 1. & 6. Vol. 2.

*Till*. See § 10. ¶ 6. Vol. 2.

*Toe of the Spindle*. See § 11. ¶ 12. Vol. 2.

*Token*. See § 25. ¶ 5. Vol. 2.

*Token Sheet*. See § 24. ¶ 9. 15. Vol. 2.

*Tongue*. See § 20. ¶ 3. Vol. 2.

*Tooth of the Plow*. The pointed edge that Cuts the Groove in the bottom of the *Shanks* in the *Blocks*. See § 21. ¶ 5. Vol. 2.

*Transpose.*

*Transpose.* See § 22. ¶ 7. & § 23. Vol. 2.

*Turn for a Letter.* It often happens when *Matter* Runs upon *Sorts*, especially in *Capitals*, or some other *Sorts* seldom used, that the *Compositer* wants that *Sort* the *Matter* Runs on; wherefore he is loath to *Distribute Letter* for that *Sort*; or perhaps his *Case* is otherwise Full. Wherefore instead of that *Letter* or *Sort*, he *Turns* a *Letter* of the same *Thickness*, with the *Foot* of the *Shank* upwards, and the *Face* downwards; which *Turned Letter* being easie to be seen, he afterwards when he can accommodate himself with the right *Sort*, takes out, and puts the right *Letter* in its room. It is also a word used jocosely in the *Chappel*, when any of the *Workmen* complain of want of *Money*, or any thing else, he shall by another *Workman* be answered, *Turn for it*, viz. Make shift for it.

*Tympan.* See § 10. ¶ 10. Vol. 2.

*Tympan-Cloath.* See § 24. ¶ 18. Vol. 2.

*Tympan-sheet.* See § 24. ¶ 7. Vol. 2.

## V

*Vantage.* When a *White-page* or more happens in a *Sheet*, the *Compositer* calls that *Vantage*: So does the *Press-man*, when a *Form* of one *Pull* comes to the *Press*.

*Varnish.* See § 11. ¶ 23. Vol. 2.

*Visorum.* See § 22. ¶ 4. Vol. 2.

*Un-lock the Form.* See § 22. ¶ 2. Vol. 2.

*Underlaid.* A Phrase used by *Press-men* for the *Light* and *Easie*, or *Heavy* and *Hard Running* in of the *Carriage*. Thus they say, *The Press goes light and*

F f f 3

easie

*easie under Hand, or it goes heavy or hard under Hand.*

*Upper Hand*, when the *Spindle* goes soft and easie, the *Press-men* say, *It goes well under Hand*, or *Above Hand*. But the contrary if it goes *Hard and Heavy*.

## W

*Wash the Form*. See § 24. ¶ 18. Vol. 2.

*Way-goose*. See Customs.

*Weak-Inck*. See *Soft-Inck*.

*Wedge*. See § 20. ¶ 3. Vol. 2.

*White-line*. A Line of *Quadrats*.

*White-Page*. A Page that no Matter comes in.

*White-Paper*. Although the first *Form* be Printed off, yet *Press-men* erroneously call that *Heap White-Paper*, till the *Reteration* be Printed.

*Whole-press*. See *Full-Press*.

*Wind-furnace*. See *Open-furnace*.

*Wind-hole*. See § 18. ¶ 1. Vol. 2.

*Wood*. See § 15. ¶ 11. Vol. 2.

*Wyer*. See § 15. ¶ 9. Vol. 2.

FINIS.



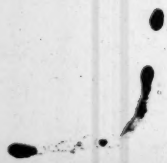
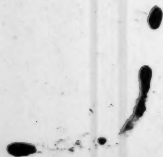




Plate 29.





*Plate 30.*





j

*Plate 31*





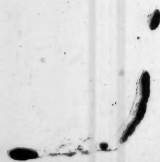


Plate 32.





Plate 33.

